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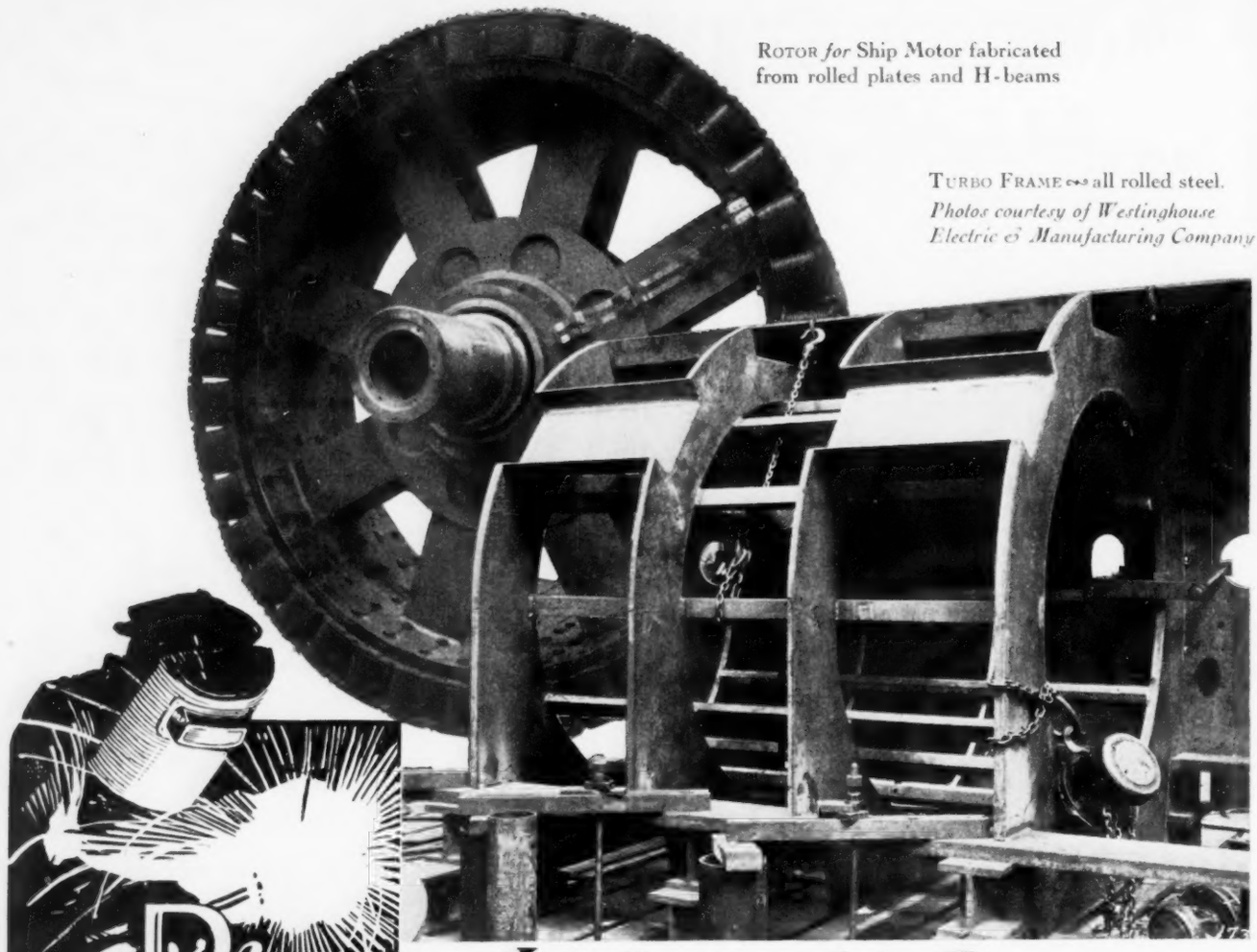
ROTOR *for* Ship Motor fabricated from rolled plates and H-beams

TURBO FRAME—all rolled steel.
Photos courtesy of Westinghouse Electric & Manufacturing Company



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Volume 90 Number 2

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

LABELING a year 1932 instead of 1931 does not work magic for business any more than putting on new license plates transforms the old family automobile. The holidays over, steel has snapped back, to about the demand and production level of the week ended Dec. 19 and accompanied by the same distressing price unsettlement and cautious buying policies. A grateful industry would probably account the resumption of mid-December activity an achievement, considering what a sinkhole the holiday period turned out to be, but the recollection that the advent of January in the past has automatically released substantial business, especially in railroad track material, supplies a discouraging comparison.

Weight of Tradition Favors Improvement

There is, however, this reassuring difference from a month ago. Then, with the holidays, inventories and other year-end interruptions just ahead there was no incentive for constructive market effort. Now, a broad unbroken stretch reaches out before steel—a stretch that normally is the most active and prosperous of the year, that in 1931 generated an expansion of operations not checked until 59 per cent was reached late in March. So, while the bare actualities of the market are little changed from a month ago and the turn of the year has not magically dissolved all the evils of 1931, the long-pull outlook is improved.

Not Within One-Third of 1921 Low

Steelworks operations last week at 25 per cent (page 47) were an advance over the 20-24 per cent rate of the week preceding. The presumption being that any change will be for the better, it is a reasonable expectation that January will surpass the 50,092-ton daily ingot rate of December (page 13), a rate that occupied only 23.6 per cent of the industry's capacity and pulled the average for 1931 down to 37.6 per cent, compared with 63 per cent for 1930. For first quarter production of steel to exceed that of the closing quarter of last year implies an operating average of 27.1 per cent. There is balm in the fact that in the 1921 depression the low point in daily production was 36,713 tons, one-third lower than in December.

Ford May Cease Holding Up Procession

Its yardstick being tonnage, steel finds it difficult to regard the automotive situation as encouraging, yet the clarifying process continues. Ford appears definitely committed to an eight and a four (page 16); two open-hearth steel furnaces at Dearborn are resuming; Graham is producing at the best rate in several months; the New York auto show starting Jan. 9 un-

Courtesy Lincoln Electric Co.

Firing-line crew going over the top, each welding 22 joints per nine-hour day, in the 26-inch gas pipe from Kettleman Hills to Los Angeles, establishing new speed records in California

Wide World Photo

Steel "giant" comes to London: Britain's largest girder, 68 feet x 10 feet 4 inches x 2 feet 4 inches; 98 tons; built by Dorman, Long. Largest reported in United States, 130 feet, 158 tons

veiled the most attractive models—considering price—in the history of the industry. Detroit is convinced automobile production in January will top December, with February continuing the gain. . . . General Motors has split its 1932 pig iron business (page 49), involving at least 100,000 tons, three ways.

Carry Freight Rates to Four Decimal Points

While the senate, heeding the President, is speeding action on the $500,000,000 Reconstruction Finance Corp. (page 12), by which the railroads expect to bolster their credit, the roads are squeezing the last mill out of the freight rate surcharges effective Jan. 4. No longer are rates adjusted to the nearest 0 or 5; they are carried out to four decimal places (page 11). Only a traffic manager can enjoy quoting shapes delivered New York at 1.7677c to 1.8677c, or ferromanganese delivered Pittsburgh at $79.8572. . . . In a technical way the railroads sense some relief in a French railroad car, self-propelled, largely light-gage stainless steel, pneumatic tired, and weighing only 325 pounds per passenger (page 12), compared with 5000 pounds in a Pullman chair car.

Obsolescence May Be Ally of Carbuilders

Eliminating weight at this rate would distress plate mills but a replacement program would stimulate carbuilders, who in 1931 booked only 4600 freight cars (page 43), the remaining 6000 placed last year going to railroads' own shops. . . . Important carriers in all sections are resuming car repair work (page 12), helping to relieve unemployment. . . . Modernizing industrial equipment has provided considerable work. A midwestern foundry has installed a pulverized coal combustion system (page 23), improving quality of its malleable iron and reducing costs. A Detroit manufacturer of tubing, copper-brazing strip steel (page 27), has added a fourth electrically-heated furnace.

Wheelbarrow Still Popular Beast of Burden

Growing resort to mechanical conveying devices would leave the impression that only ceilings are being used for handling materials, yet the wheelbarrow retains sufficient vogue to require 10,000 tons of steel annually for its manufacture (page 30). Thirty per cent of all barrows now made are all-steel. . . . Another phase of transportation is charging open-hearth furnaces, one eastern steelworks (page 26) finding depreciation retarded and power costs reduced 30 per cent by the use of charging boxes and charging box cars of welded steel plate construction. . . . A double compartment scale car is being operated more efficiently in the stockhouse of a blast furnace by the use (page 28) of a modern recording system.

Cheap Pound Helps Iron Scale Tariff Wall

Abroad, the new year also has failed to effect an instantaneous cure of market ills. . . . Many British steelworks have not opened since the Christmas shutdown (page 55); on the Continent trade continues dull, enlivened only by French and Belgian competition in each other's territory. . . . Taking advantage of the depreciation in sterling, enough Lincolnshire pig iron to keep one blast furnace busy several months has been sold in the United States (page 55). Some British open-hearth steel also has been sold in the states. . . . Disturbed economic conditions have impelled the British Institute of Metals to cancel its 1932 meeting in the United States and Canada (page 17).

Hold Show for New Rolling Mill Models

More prosaic than an automobile show but exciting relatively as much interest among engineers was the showing (page 27) last week of a new tandem four-high cold strip mill to produce strip 72 inches wide, and a new twin motor cold strip mill, by a Pittsburgh builder. . . . As if to vie with electric mills, a steam driven blooming mill in the Pittsburgh district (page 28) is converting 8700-pound ingots into 8-inch blooms in 17 passes with 6 turns on a 44-inch mill at the rate of 130 tons per hour. . . . Mounting reels horizontally at the floor level in an Ohio mill (page 28) has been found to reduce the fatigue of workmen in handling coils of hot-rolled strip.

Fractional Delivered Prices Caused by Freight Surcharge

RAILROAD freight rates on practically all raw materials and finished products of the iron and steel industry have undergone a thorough overhauling as a result of the application of emergency surcharge on rates effective Jan. 4, following establishment of new class rates Dec. 3, cancellation of commodity rates in western territory Dec. 10, and the increase in Chicago district switching rates Dec. 10.

In brief, the emergency tariff increases finished steel product freight rates 2 cents a net ton, coal, coke and ore 6 cents, and pig iron and scrap 12 cents. Fractional figures result from conversion of these charges to a gross ton basis, on which pig iron, scrap and semifinished products are sold, and a similar situation exists where a surcharge of 10 per cent on rates of less than $1.20 per ton is applied in lieu of the full advance.

The increase in assembly costs, if it has any influence, will tend to stiffen producers' quotations. Most scrap dealers are bidding 15 cents less per ton on old material, as contracts usually require the increase to be absorbed before final delivery. On the whole, less confusion results to the industry than if a brisk market obtained.

Circuitous Routes to New York from Pittsburgh Seen

PITTSBURGH—Some confusion and inequalities have attended introduction of emergency freight rates, although these are overshadowed in a measure by rather unusual situations arising through combination rates which have come to light following establishment of new class rates Dec. 3.

The new class rates on less-carloads of iron and steel products raised the charge from Pittsburgh to New York from 39½ cents to 52 cents. A combination rate via Latrobe, Pa., 30 miles east of Pittsburgh, however, is only 48½ cents, while a combination rate from Johnstown to New York via New Castle is 37½ cents and on this latter routing Pittsburgh is considered as an intermediate point even though Johnstown lies between Pittsburgh and New York.

Most steel products are sold f.o.b. Pittsburgh, although semifinished steel frequently is quoted on a delivered basis. In both cases, however, the higher freight rates are passed on to the consumer. Recognition of the advance was taken into consideration in the signing of new contracts for semifinished steel where sold on a delivered basis, and prices were adjusted accordingly.

Iron and steel scrap quotations also are delivered prices, but it will be necessary for the emergency tariff to be absorbed somewhere between the source of origin of the scrap and the last sellers rather than by the ultimate consumer. The present practice of some dealers is to bid 15 cents per gross ton less than formerly in purchasing old material in order to offset the increase of 13.44 cents on former rates of $1.20 per 2000 pounds or $1.344 per gross ton and higher.

One of the striking inconsistencies in the new tariff is the listing of flue dust under the general classification of fertilizers, which take an advance of 20 cents per net ton. Mill scale and cinder scale, on the other hand, receive an increase of only 6 cents per net ton.

A LITTLE STEEL GOES A LONG WAY: Only 100 tons is used in this Columbia Broadcasting Co.'s new transmitting tower, Wayne township, N. J., erected by Blaw-Knox Co., Pittsburgh, but it is 665 feet high, and its broadcasts are heard around the world. The tower is 7 inches wide at its ends, and 27 feet at its widest point

Users of Iron and Steel Absorb Most of Surcharge

NEW YORK—Producers of steel and allied products are gradually working out of the maze of complications which attended the recent application of the emergency freight surcharges.

Due to the short time allowed after the interstate commerce commission's final order and to the character of some of the changes, more confusion prevailed than upon any similar occasion in recent years. Yet traffic departments are now getting their schedules in shape and before the trade, by dint of much concentration and overtime labor.

In general, the burden of the increases will fall on the consumer. In virtually all cases where commodity prices are based on a figure at point of production, actual or nominal, the surcharge as a portion of the freight charge will be added to the account of the buyer; and most steel companies in their contract forms have a clause which provides for such a contingency. Most iron and steel products are quoted at point of production.

There are, however, certain exceptions, where the items are quoted on a delivered basis and in which cases the shippers will likely absorb the extra surcharge. One case, it appears, is scrap. Another is by-product coke, as it is quoted in certain districts, New England, for instance. But in such cases the ratio of the surcharge to the price received is relatively small.

Needless to say, steel producers do not escape participation in the burden, for as consumers of materials they will have to pay the surcharge on many shipments coming into their mills. Moreover, in view of the weak condition of their markets they stand little chance in passing on the extra charge, it is believed.

New rates on finished iron and steel products here from principal producing centers are: Pittsburgh, 35 cents, against 33 cents previously; Bethlehem, Pa., 16.775 cents, against 15.25 cents; and Coatesville, Pa., 19.8 cents, compared with 18 cents.

One effect of the increase, it is believed, will be to direct more business to motor trucks.

Expect Stiffer Finished Steel Prices at Chicago

CHICAGO — Western shippers of raw materials and finished steel products are called upon to bear a heavy freight rate burden with the surcharge increases on the heels of approximately 50 per cent increases

in rates on finished steel, through cancellation of commodity rates in western territory, effective Dec. 10. On top of these increases was a step-up of the Chicago switching district rate, also on Dec. 10.

The net result, it is contended, will be to stiffen prices on finished products. With steelmakers bearing an added burden of 40 cents a ton on incoming raw materials and additional freight costs to points where delivered prices are made, prospects are that even further advances may result.

The combined effects of the recent higher freight tariffs in the West resulted in some sharp jumps in line-haul charges. For instance, the charge from Chicago to St. Paul, through the recent higher rates, including the emergency surcharge, has been advanced from 27.5 cents to 43.5 cents.

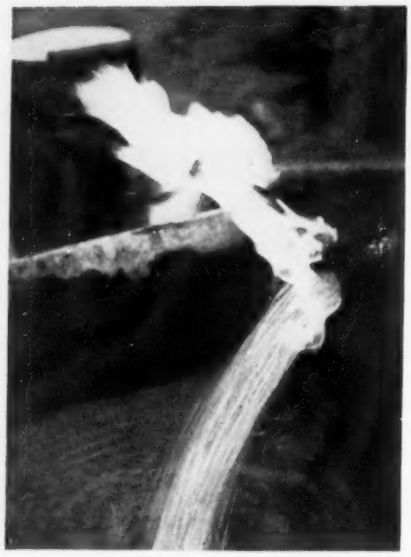
Parity Held for Pig Iron

Many buyers quickened shipping requisitions against pig iron contracts late in December to beat surcharge advances. Sales agencies handling southern pig iron and other raw materials in this market are obliged to meet a differential of 13.4 cents a gross ton, but with the increase in the Chicago switching rates, the parity of southern and northern pig iron is virtually maintained. Other shippers of raw materials from southerly districts however, including coal, coke and ferroalloys, point out that they are at a disadvantage.

Sellers of southern pig iron in this market are not quoting the added surcharge in the delivered price, but are naming the base Alabama furnace quotation, plus the all-rail freight as the delivered quotation, the same as before the surcharge was added. All contracts, however, specify the emergency freight surcharge to be met at point of delivery.

Chicago & North Western and the Chicago, Milwaukee, St. Paul & Pacific railroads on Feb. 5 will institute new freight tariffs between Chicago and Milwaukee, subject to approval of interstate commerce commission at Washington. The increase is designed to recover for the carriers a substantial portion of the business which has drifted to other forms of transportation, principally trucks.

Special low rates will be accorded shippers delivering freight to team tracks in lots of 10,000 pounds or more, with still lower rates on lots of 25,000 and 40,000 pounds. These shipments must be made from one shipper in one car in one day for delivery to one consignee at a single destination. This service will be available to operators of trucking services, making it possible for them to confine their operations to pickup and delivery service in the two cities.



FIRE AND WATER FROM SAME PIPE: On installing a turbine pump to lift water from a 525-foot well, drilled recently at the Ferro Enamel Corp.'s plant, Cleveland, company engineers encountered gas, which burns with a pure, hot flame while the water flows. The gas cannot freely discharge itself due to great weight of water on top of it. Months and possibly years of pumping may be necessary to exhaust the pocket

The Business Week In Washington

PRESIDENT HOOVER'S principal business relief measure — the $500,000,000 Reconstruction Finance Corp.—is expected to have passed the senate and be ready for action in the house this week. Authority to issue $1,500,000,000 in debentures, to be purchased by the treasury, was included in the bill approved by the senate banking and currency committee last week. Credits are to be extended to banks, railroads, insurance companies in need of accommodations. This is regarded as the most comprehensive relief measure proposed by the administration.

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Senator Wagner, Democrat, of New York, will seek an early hearing by the senate committee on commerce on his bill to create a federal employment service to be operated in co-operation with the states. It is practically the same bill which suffered a pocket veto at the close of the last session of congress.

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While Democrats have introduced a tariff bill, authorizing the President to call an international congress for adjusting tariffs and revising power of the tariff commission, no specific changes in duties are proposed and it is not expected that the measure will become law. It largely puts house Democrats on record as having attempted tariff legislation. Democrats have sufficient party strength to pass the bill in the house, and a coalition of Democrats and insurgents might put it through the senate, but a presidential veto is certain.

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Reduction of railroad wages will be considered at Chicago, Jan. 14, when the Railway Labor Executives association meets with a committee of nine railroad presidents. In Washington a wage cut still is regarded as certain. Meanwhile, 23,000 Southern Pacific shopmen have accepted a 10 per cent reduction.

The Railroad Credit Corp., which will distribute revenues accruing from the freight rate increase effective Jan. 4, is functioning.

New Railroad Car Is Stainless Steel, Welded

A pneumatic-tired, self-powered, stainless steel railway car is nearing completion in the Edward G.. Budd Mfg. Co.'s Philadelphia plant, the company recently signing a contract with Michelin et Cie., of France, obtaining the right to develop and sell the car in this country.

The car is designed to carry 40 passengers, and weighs 325 pounds per passenger, in comparison with 5000 pounds for the average parlor car. Running on rails, with pneumatic tires, at high speed it is said to give the passengers the sensation of gliding.

The car is being constructed by the Budd shot welding process, providing precision control of current and pressure of the weld, permitting the metal to retain its desirable metallurgical characteristics and corrosion resisting properties.

Business Is Better

COLORADO FUEL & IRON CO. is putting over 1000 employes at its Pueblo, Colo., works back to work between Jan. 1 and 18. The pipe foundry was first to resume. This week blast furnace "E," nine open-hearth steel furnaces and the coke plant went on. The rail mill is to begin single-turn operations Jan. 18.

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Chicago & Alton railroad has put on a 4-day week basis 650 employes of the locomotive department shops at Bloomington, Ill., laid off Nov. 12. Chicago Great Western is returning 600 men to work at its Oelwein, Iowa, shops for at least 90 days, an increase of about 140 men over a year

ago. St. Louis Southwestern has reemployed 325 shop employes laid off in December. Union Pacific is reopening its shops in Omaha, Cheyenne, Denver, Pocatello, Portland and Los Angeles, closed for some time. Boston & Albany has reopened its repair shops, returning 400 men.

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Responsive to increased automotive and industrial demand for bearings, the Timken Roller Bearing Co., Canton, O., has increased its working schedule for January, planning to operate 20 days. No additional men are being employed.

December Iron Production Was Close to Estimate

Actual production of coke pig iron in December varied little from the estimate published in the Jan. 4 issue of STEEL. Total production of the month was 980,377 gross tons, a loss of 121,443 tons, or 11.0 per cent, from the 980,377 tons of November.

Average daily production was at the rate of 31,625 tons, which compared with the 36,727-ton rate of the previous month, was a drop of 5102 tons per day, or 13.9 per cent. On the last day of December, 57 blast furnaces were making iron, against 67 on Nov. 30.

In 1931, total iron production amounted to 18,263,011 tons, a figure which was 13,178,477 tons, or 41.9 per cent, less than the 31,441,488 tons of 1930.

Operations in December, calculated by relating production to capacity, were on a basis of 22.0 per cent. The rate for November was 25.5 per cent.

DECEMBER IRON PRODUCTION

	No. in blast Last day of month Dec.	Nov.	Total tonnage made Merchant	Nonmerchant
Ohio	11	18	11,006	202,041
Pennsylvania	16	17	23,255*	231,798
Alabama	6	6	40,409	40,706
Illinois	6	6	53,592	71,449
New York	6	6	52,033	32,561
Colorado	0	0		
Indiana	5	5		
Maryland	2	3	.....	136,395
Virginia	0	0		
Wisconsin	0	0		
Kentucky	0	1		
Massachusetts	0	0		
Tennessee	0	0	.....	54,119
Utah	1	1		
West Virginia	2	2		
Michigan	2	2		
Minnesota	0	0	13,452	6,581
Missouri	0	0		
New Jersey	0	0		
Spiegel and ferro — all states	....	....	†	10,980
Total	57	67	193,747	786,630

*Includes spiegeleisen and ferromanganese. †Included in Pennsylvania.

Ingot Rate Sets Depression Low but Tops Worst of 1921

PRODUCTION of open-hearth and bessemer steel ingots in December broke through the previous low daily rate of this depression, which occurred in October, and declined to the lowest level since August, 1921.

However, even with the daily rate in December down to 50,092 gross tons, compared with 63,747 tons in November, this gait was one-third faster than at the low point of the depression in 1921, when the bottom was reached with 36,713 tons daily in July.

December's production of 1,302,399 gross tons of open-hearth and bessemer ingots, according to the American Iron and Steel Institute, New York, gave 1931 a total of 24,900,195 gross tons, compared with 39,286,287 tons in 1930 and 54,312,279 tons in record 1929. Nineteen thirty one was a 37.69 per cent steel year; the 1930 average operating rate was 63.09 per cent.

Some forecast that the first quarter of 1932 will show improvement over the last quarter of 1931 although probably falling short of the first quarter of 1931. The daily average rate in the last quarter of 1931 was 57,605 tons, and to equal this the first quarter average would have to show an increase of 15 per cent over December. The average for the first quarter of 1931 was 103,488 tons, more than double the December pace.

Smith Plans Steel Houses

A. O. Smith Corp., Milwaukee, is making progress on experimental work in building welded steel and concrete dwelling houses. It is understood bids have been asked on the material entering into the construction of several thousand dwellings of this type.

An appeal is to be made to corporations supplying housing facilities for employe ownership. Each home would be sold complete with furniture and fixtures.

Steel Ingot Production — 1930-31

95.21 Per Cent of Industry Reporting
Gross Tons

1930	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	No. of working days	Approximate daily output all companies	Per cent operation
Jan.	3,157,761	441,572	3,599,333	3,778,235	27	139,935	69.89
Feb.	3,335,428	508,618	3,844,046	4,035,111	24	168,130	83.98
Mar.	3,513,269	539,616	4,052,885	4,254,331	26	163,628	81.73
Apr.	3,405,671	509,234	3,914,905	4,109,492	26	158,057	78.95
May	3,265,353	528,968	3,794,321	3,982,915	27	147,515	73.68
June	2,849,079	407,586	3,256,665	3,418,535	25	136,741	68.30
July	2,430,128	353,723	2,783,851	2,922,220	26	112,393	56.14
Aug.	2,541,367	374,467	2,915,834	3,060,763	26	117,722	58.80
Sept.	2,275,910	429,975	2,705,885	2,840,379	26	109,245	54.56
Oct.	2,165,341	399,704	2,565,045	2,692,539	27	99,724	49.81
Nov.	1,807,133	300,337	2,107,470	2,212,220	25	88,489	44.20
Dec.	1,659,026	226,788	1,885,814	1,979,547	26	76,136	38.03
Total	32,405,466	5,020,588	37,426,054	39,286,287	311	126,322	63.09
1931							
Jan.	2,044,298	296,620	2,340,918	2,458,689	27	91,063	42.86
Feb.	2,085,529	296,974	2,382,503	2,502,366	24	104,265	49.08
Mar.	2,504,060	346,137	2,850,197	2,993,590	26	115,138	54.20
Apr.	2,275,404	316,668	2,592,072	2,722,479	26	104,711	49.29
May	2,083,833	301,639	2,385,472	2,505,485	26	96,365	45.36
June	1,730,109	246,365	1,976,474	2,075,910	26	79,843	37.58
July	1,570,776	225,030	1,795,806	1,886,153	26	72,544	34.15
Aug.	1,462,469	174,631	1,637,100	1,719,462	26	66,133	31.13
Sept.	1,274,321	199,151	1,473,472	1,547,602	26	59,523	28.02
Oct.	1,320,158	195,943	1,561,101	1,592,376	27	58,977	27.76
Nov.	1,276,906	240,441	1,517,347	1,593,684	25	63,747	30.01
Dec.	1,069,468	170,546	1,240,014	1,302,399	26	50,092	23.58
Total	20,697,582	3,009,894	23,707,476	24,900,195	311	80,065	37.69

Figures exclude crucible and electric ingots. Operating percentages for 1930 are based on capacity of 62,265,670 gross tons as of Dec. 31, 1929; for 1931 on capacity of 66,069,570 gross tons as of Dec. 31, 1930.

Industrial Men in the Day's News

Hobart S. Johnson, President, Gisholt Machine Co., Madison, Wis.

FOLLOWING graduation from University of Wisconsin, he entered the employ of the Gisholt company, which he now heads.

AT the request of the government ordnance department he organized the Northwest Ordnance Co.

HE has been a menber of the executive committee of the National Defense division, A. S. M. E.

HOBART S. JOHNSON, who as noted in STEEL, Dec. 21, was elected president of Gisholt Machine Co., Madison, Wis., to fill the vacancy occasioned by the death of his brother, Carl A. Johnson, in October, 1931, has been connected with the company continuously almost from its beginning.

Born at Madison in 1873, he attended the University of Wisconsin with the class of 1894 in mechanical engineering. During vacation periods and after his graduation from college, he learned the trade of machinist.

Two years after his graduation, or in 1896, he became superintendent of the company, later secretary and treasurer, and since 1915 he has been vice president and manager.

At the request of the ordnance department during the World war, Mr. Johnson organized and was president and manager of the Northwestern Ordnance Co., which manufactured field artillery for the United States government at that time.

Since the war he was a member of the executive committee of the National Defense division, American Society of Mechanical engineers.

HENRY H. PECK, formerly with the Standard Steel Works Co., Burnham, Pa., has joined Lukenweld Inc., Coatesville, Pa., as manager of sales. Mr. Peck for many years was associated with iron and steel foundries throughout the country, principally in the sale of castings. Lukenweld Inc. is a division of Lukens Steel Co., Coatesville, Pa., and is engaged in the manufacture of arcwelded rolled steel parts.

Mr. Peck succeeds Mr. John S. Bleecker, formerly in charge of sales for Lukenweld Inc. Mr. Bleecker has been appointed manager of sales research and advertising for Lukens Steel Co. and its divisions: Lukenweld Inc. and By-Products Steel Corp.

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Harry P. Nichols, consulting engineer, has severed his connection with American Abrasive Metals Co., New York, and is now located at 7 Dey street, New York.

□ □ □

Barney Magen, for a number of years associated with the New York offices of Frank Samuel & Co., scrap, pig iron and ore dealers, has become affiliated with Grace Iron & Steel Co., 815 Broadway, Brooklyn, N. Y., scrap interests.

□ □ □

Henry A. Taubensee, who as noted in STEEL, Dec. 28, had been appointed Chicago district sales manager of Newton Steel Co., Detroit, continues to be affiliated with Taubensee & Richards, Chicago, representing Continental Steel Corp., Kokomo, Ind., in that district.

□ □ □

J. A. Wirth, works engineer at the Sharon, Pa., plant of the Westinghouse Electric & Mfg. Co., and the first Westinghouse man to be employed, has retired after 44 years' service with the company. The supervisory force at the Sharon works gave Mr. Wirth a farewell party and presented him a radio.

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Carl Thompson, superintendent of the New Castle, Pa., works of American Sheet & Tin Plate Co., Pittsburgh, subsidiary of United States Steel Corp., has become acting general superintendent of the Laughlin works, Martins Ferry, O., of the American company. He succeeds E. A. Machin, on leave of absence due to illness.

Harold Pyle, assistant manager of the Laughlin works, has been transferred to the New Castle works.

□ □ □

T. P. Draper, formerly vice president of the Sharon Steel Hoop Co., Sharon, Pa., has been appointed general manager of the Steubenville, O., works of the Wheeling Steel Corp., Wheeling, W. Va. He succeeds F. C. Schwartz, who has resigned.

Mr. Draper, prior to his association with the Sharon company, was in executive operating capacities with the Trumbull Steel Co., Warren, O., and Youngstown Sheet & Tube Co., Youngstown, O.

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Herbert D. Whiton, acting chief mechanical engineer of the Byllesby Engineering & Management Corp., Chicago, has been made chief mechanical

engineer. Since 1932 he has been with the Byllesby corporation; previously he was associated with Stone & Webster, Babcock & Wilcox Co., Ponce Railway & Light Co. and Minneapolis General Electric Co.

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W. S. Stephenson, district manager at Philadelphia for American Rolling Mill Co., Middletown, O., has resigned. He has been affiliated with the industry for many years.

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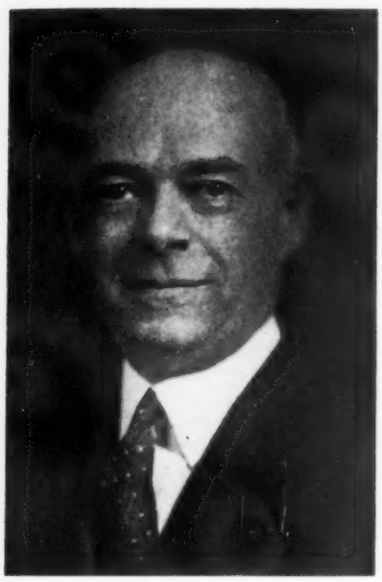
G. H. Staat, formerly traffic manager of Pickands, Brown & Co., Chicago, has been made traffic manager of Interlake Iron Corp., Chicago, and Pickands, Mather & Co., Cleveland, with headquarters at Cleveland.

□ □ □

William E. Umstattd has been made



Henry H. Peck

executive vice president of the Timken Roller Bearing Co., Canton, O. Mr. Umstattd has been with the Timken organization for 13 years, during the last two years of which he has been plant manager.

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K. M. Irwin, formerly mechanical engineer of the United Gas Improvement Co., Philadelphia, has been transferred to the position of assistant to the vice president in charge of engineering for the Philadelphia Electric Co., Philadelphia.

□ □ □

William Grove, formerly with Ingersoll Milling Machine Co., Rockford, Ill., has become associated with the sales engineering department of William Sellers & Co. Inc., Philadelphia, to specialize on sales engineering of planer type milling machines and floor borers.

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J. K. B. Hare, of the New York office of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been appointed transportation manager of the Westinghouse central district, with headquarters in the Grant building, Pittsburgh.

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James Caven Foster has been appointed manager of sales for wire products of the Jones & Laughlin Steel Corp., Pittsburgh. He succeeds E. D. Batchelor, who has been placed in charge of a special department of general sales. Mr. Foster has been assistant manager of the wire department for a number of years.

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Walter C. Carroll, formerly vice president of the Inland Steel Co., Chicago, and later president of the Oil Well Supply Co., Pittsburgh, has become associated with the American Sheet & Tin Plate Co., Pittsburgh. Mr. Carroll was identified with the American Sheet & Tin Plate Co. for more than 20 years prior to his joining the Inland company.

□ □ □

J. Frederic Wiese, who has been assistant to the general manager of sales of Lukens Steel Co., Coatesville, Pa., has been appointed assistant to F. H. Gordon, vice president in charge of sales.

Mr. Wiese, upon graduation from Swarthmore college in 1921, joined the Parkesburg Iron Co., Parkesburg, Pa., as mill representative with headquarters in Chicago, largely contacting the railroads. In 1926 he joined Lukens company as assistant to general manager of sales, and two years later was placed in charge of the sale of Lukens products to railroads. In his new capacity, Mr. Wiese will continue with headquarters in Coatesville as well as his supervision of railroad sales of Lukens.

□ □ □

John H. Van Deventer has been appointed editor of *The Iron Age*, succeeding William W. Macon, who becomes consulting editor. Mr. Van Deventer has had a long experience in the publishing field. He was graduated from Cornell university in 1903 as a mechanical engineer, and subsequently engaged in manufacturing work, being superintendent of production of the Goulds Mfg. Co., Seneca Falls, N. Y., from 1905 to 1907 and then general superintendent and factory manager of the Buffalo Forge Co., Buffalo, where he remained until 1914, when he entered editorial work with the McGraw-Hill Publishing Co., New York, becoming editor of the *American Machinist*. In 1921 he became president of the Engineering Magazine Co. and editor of *Industrial Management* and *Industry Illustrated*, which were sold in 1926 to the McGraw-Hill company. In the World war Mr. Van Deventer assisted in organization of the United States ordnance department.

Obituaries

HUGH P. TIEMANN, assistant metallurgical engineer of the Carnegie Steel Co., died Jan. 4 in Pittsburgh from an illness which had its inception in burns received Nov. 28.

Mr. Tiemann was the author of *Iron and Steel*, an encyclopedia of the industry, and various technical papers. His association with the Carnegie Steel Co. started in 1901 after his graduation in 1900 from Columbia university. On going to Pittsburgh, Mr. Tiemann was stationed at the Homestead works of the Carnegie company and later transferred to the city

Hugh P. Tiemann

offices, where he remained throughout the remainder of his life.

He was a member of the American Society for Testing Materials, the American Society for Steel Treating, the American Institute of Mining and Metallurgical Engineers, the British Iron and Steel institute, the Association of American Steel Manufacturers, and Pittsburgh Engineers' society, and American Iron and Steel institute.

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Thomas B. Janssen, 62, Gary, Ind., for 21 years head of the forge department of the American Bridge Co. plant there, died recently. He had been employed by the company 40 years.

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John W. Lees, 68, vice president of Inland Steel Co., Chicago, since 1921, died Jan. 3 at his home, Indiana Harbor, Ind. Mr. Lees had been with the Inland company since 1903, when he became general superintendent of the

(*Concluded on Page* 53)

MIRRORS of MOTORDOM

DETROIT

EVEN though early January finds automobile assemblies still slow until the shows are past, the industry considers itself in relatively good technical position.

A minimum stock of 1931 models is being carried over into 1932. Sentiment in Detroit, which still is chary of prognosticating, nonetheless is somewhat less despondent than in January, 1931. Forecasts of 1932 production are consistently tinged with conservatism.

January will probably account for the production of over 100,000 automobiles—just how many over depending on when the revised Ford four and the new Ford eight attain volume production.

February, in turn, should increase over January. A bulge—depression or prosperity—is an accepted fact in the industry at that time.

At this writing, with the features of 1932 models of most automobile makers announced, Ford is the exception in revealing its line.

In spite of conflicting rumors on Ford activity the following seems established: A few new eights will be shown at the time of the Detroit if not the New York show; a decision has been reached on the long-troublous question of the new motor's cradling; Ford's purchase of steel from outside mills is a matter which will be settled in the very near future; eight-cylinder motor blocks constitute the bulk of the company's foundry output at present; two open hearths at Dearborn are resuming.

Chevrolet Sales Delayed

Chevrolet, leader of production for December, has suffered in actual registrations by the Ford delays.

Though the former assembled over 59,000 models last month, a word of explanation shows this volume in large part due to the low output of 1931 models in November. Many prospective purchasers of 1932 Chevrolets have apparently held off, pending a look at the new Fords.

Buick, too, has slowed. This division of General Motors, with dealers well stocked, has tapered about 20 per cent in production. The situation of the middle-priced used car market has been attributed to be the largest hindrance to Buick's sales at this time.

Pontiac showed the largest week-to-week gain of any General Motors unit last week. Cadillac-LaSalle continued on its expanded schedules, initiated in late December.

Decide Ford's Cradling

Ford's eight has been settled, at least so far as the motor cradling is concerned. The hydraulic principle is understood to have been rejected week before last after long experimenting.

Several observers to testing of the new motor on a large sand-pit testing ground at Dearborn say the front part of the car's frame rises perceptibly abreast of the front wheels, describes a perfect arc, and that the motor is suspended from the highest point of the frame.

News to Ford four-cylinder Model A owners: The new motor is virtually vibrationless, some enthusiasts likening its performance to that of an electric motor.

Prices have been received by Ford for the first-quarter volume steel needs from its outside mill suppliers but as yet no closing has come through. In its place has been a marked activity in steel fill-in purchases of 2000, 4000 and 6000-pound lots and all for rush deliveries.

Though Ford's stock of billets is of considerable volume, the company was making bottom on two 100-ton open hearths last week, the first activity in this department since June 28, 1931.

Presumably the steel from these furnaces will be largely alloy. The company's bar mills have been rolling spring stock intermittently.

Some parts suppliers have been sorely pressed to meet deliveries. In several instances these deliveries indicate stocking, for the present at least, of parts for 2000 assemblies a day.

Kelsey-Hayes Wheel Co., for one, has had an assembly line on new Ford wheels and is making 3000 to 4000 a day. These are smaller than the Model A type. The schedule, however is lower than expected.

A cursory review of the New York auto show opening Jan. 9 reveals that General Motors has refined its Oakland V-type eight, calls it the Pontiac. Thus the prediction in these columns last fall that General Motors would abandon Oakland as a name is substantiated. Also, Olds has brought out its long anticipated eight and is now presenting a six and an eight in the same wheelbase chassis, 116½ inches.

Both Oldsmobile models have free wheeling with dash control, improved syncro-mesh-silent shift transmission, ride regulator, oil temperature regulator, full automatic choke and engine decarbonizer.

Auburn's new twelve is a V-type, with both sides of the V cast into a single block. The engine has a four-point mounting, its rear points on rubber. In addition to ride control, this Auburn model offers a two-speed rear axle with two ring gears in the differential, thus equivalent to a six-speed transmission.

Chrysler has transplanted floating power from Plymouth to Dodge and DeSoto. And finally, that there are 17 makes of cars selling beneath $1000, five of the 17 being 1932 newcomers.

G. M. C. Profit Less?

Regarding General Motors as a whole, a further bearish element is prevalent concerning the company's common stock. With prices reduced on each of its models, profit margins have been commensurately cut. Net profit for each 1932 Chevrolet is reported to be now reduced to between

$30 and $35. Shrewd observers foresee a possibility of smaller "G. M" earnings in 1932, though sales volume may expand.

Cleveland Crane Buys Into Steelweld Co.

Cleveland Crane & Engineering Co., Wickliffe, O., has purchased a substantial interest in the Steelweld Machinery Co., Cleveland, manufacturer of rolled steel frame bulldozers, bending brakes and special tools. The former company has taken over the Steelweld's facilities, and hereafter will manufacture the company's products, Steelweld continuing its corporate existence as a selling agency. Cyril Bath remains president of the Steelweld company, in charge of sales; William F. Wehr, vice president; A. C. Garnett, secretary; and E. F. Pavlin, treasurer.

British Metals Institute Cancels American Meeting

In view of the disturbed economic and financial conditions that prevail in Europe and America, the council of the British Institute of Metals has found it necessary to postpone the 1932 meeting which was to have been held in the United States and Canada next autumn. The meeting had been planned with the close co-operation, as prospective hosts, of the American Institute of Mining and Metallurgical Engineers. An announcement regarding the Institute's place of meeting next autumn will shortly be made.

Low on Seamless Tubes

Washington—Globe Steel Tubes Co., Milwaukee, is low on seamless steel tubing for Norfolk, navy department, bidding $10,437.45 on the entire lot. On 13,300 feet of chrome molybdenum steel tubing for Philadelphia, Ohio Seamless Tube Co. is low with $2437.92 for the lot.

Confers on Rail Price

Washington — Attorney General Mitchell was in conference Jan. 8 with members of his staff relative to the investigation of the price of steel rails instigated by Senator Couzens, of Michigan.

Scrap Directors To Meet

New York—Directors of the Institute of Scrap Iron and Steel Inc., of which Benjamin Schwartz is director general, meet here Jan. 14 to consider matters of policy for the industry and adopt a budget for 1932.

Here and There in Industry

AMERICAN MONORAIL CO., Cleveland, has been awarded a contract by the United States navy to provide a special overhead monorail system with switches to be installed in the new dirigible AKRON for handling the five airplanes to be housed within the ship. This airship is the first to be equipped with planes. According to F. C. Harris, designer of the system, minimum weight is an essential requirement, therefore, except for a few highly stressed parts, antifriction bearings and bolts, construction will be duralumin. The equipment, to be hand operated and to be used to hangar the planes after they are lifted into the ship, is all of special design. Shipment of the system by Jan. 17 is specified.

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Erb-Joyce Foundry Co., Detroit, moved its Detroit office to 9771 French road, Jan. 1.

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Universal Cooler Co. Ltd., Chicago, has taken over the plant of the Brantford Specialty Co., Brantford, Ont. Alterations are under way for operation in January.

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Chicago Bridge & Iron Works, Chicago, has moved its Oklahoma-Kansas sales office at Tulsa, Okla., from the Exchange National Bank building to 318 Philcade building.

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Signode Steel Strapping Co., 2600 North Western avenue, Chicago, has put on a commercial basis its new combination machine for strapping shipping containers in one operation.

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Schulte Grinding & Polishing Machine Co. Inc., manufacturer of sheet and strip grinding machines, has moved from 1958 West Forty-fifth street, Cleveland, to 6400 Breakwater avenue N. W.

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Standard Steel Spring Co., Pittsburgh, has purchased the auto spring business of Harvey Spring & Forging Co., Racine, Wis. The Harvey company will retain a portion of its plant and continue the manufacture of auto springs for replacement as well as other forgings.

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H. A. Brassert & Co., 310 South Michigan avenue, Chicago, has sold to the Atlantic Refining Co., Philadelphia, 15 Askania automatic regulators to be used on its coke oven battery being built there. These regulators will be used on pressure, draft and temperature control.

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Riehle Bros. Testing Machine Co., Philadelphia, has been appointed exclusive agent in the United States, British Columbia, Hawaii, Philippine islands and Mexico for Adam Hilger Ltd., London, Eng., manufacturer of astronomical and optical instruments, including devices for steel testing.

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Lukens Steel Co., Coatesville, Pa., has appointed Dravo-Doyle Co., 300 Penn avenue, Pittsburgh, its sales representative in that district for plates, flanged work and other products. McKee-Oliver Inc. will continue to carry Lukens products in warehouse stock at 1326 West Carson street, Pittsburgh.

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Fischer Foundry Corp., Bound Brook, N. J., has acquired the business of the Fischer-Sweeny Bronze & Aluminum Co. Inc., Bound Brook. Operations will be consolidated at the plant of the Fischer Foundry Corp. W. F. Jennings is president of the new company.

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General Pipe & Tube Co., Bordentown, N. J., has been reorganized as the Midland Tube & Pipe Co., to operate the Bordentown plant, closed for some time. The new company will specialize in the manufacture of seamless steel merchant pipe, ⅛ to 2 inches, inclusive, and seamless steel mechanical tubing, ⅛ to 3 inches.

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American Rolling Mill Co. will remove its Cincinnati district office to the home offices at Middletown, O., about Jan. 16. Resident salesmen will remain in Cincinnati and direct telephone communication will be maintained with Middletown. The change is made to afford better service as most patrons in the Cincinnati district are located in central Ohio and Indiana, reached advantageously from Middletown.

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Sutton Engineering Co., Pittsburgh, has taken over the exclusive sale in the United States and Canada of all machinery manufactured by Joshua Bigwood & Sons Ltd., Wolverhampton, Eng., including hydraulic sheet flattening machines, galvanizing machines, corrugating machines, roller straighteners, bending and curving machines, circular shearing machines, punches, shears and presses, steam and drop hammers, hydraulic pumps, and gear drives.

EDITORIAL

Government House-Cleaning Is Boon To Industry

AT LAST the long delayed attack against extravagance in federal, state and local government is being waged vigorously. The aroused public has raised its voice with such vehemence that politicians are forced to heed their demands. If the present uprising against unnecessary expenditures is any criterion we may expect in 1932 drastic reductions in the cost of government.

Industry should receive much encouragement from this movement toward economy because its stake is tremendous. Steel producers alone pay about $100,000,000 in taxes, which in a year of moderate activity is equivalent to a burden of about $2 per ton of ingot output. Taxes paid by the Class I railroads exceed $350,000,000 annually. If the tabulation were expanded to cover other branches of the steel industry as well as industries which consume steel in important volume it is likely that a figure in excess of one billion dollars would be found to represent the annual tax burden which exercises a fairly direct influence upon the production and consumption of steel. The indirect effect of excessive taxes, which is felt through curtailed purchasing power of individuals including particularly farmers, prospective home builders, etc., is equally or more important.

Manufacturers Bear Share of Cost of Inefficient Local Administration

Therefore industrial leaders can well afford to look into the situations in federal, state and local governments which are responsible for excessive taxes. Unless he has been watching civic affairs with more than usual attentiveness, the average executive will be appalled at the haphazard manner in which his tax money is spent by his public servants.

Local government is notoriously inefficient. If a company happens to be operating in or near a large city, the cost of government probably is increased far above a reasonable level because of the popular fad which seems to dictate that every small community within the metropolitan area should have its own government. In counties embracing a city of a population of a million or more it is not uncommon to find from 20 to 50 separate municipalities or villages, each with its own mayor, council, and fire and police departments. The industries in a district where this condition exists are forced to pay taxes far in excess of the amount required for efficient government. The overlapping jurisdiction in county and large city administrations also is a source of waste. Also the fact that those responsible for the management of industry usually live in suburbs and do not vote in the city in which their plants are located is responsible in part for the improper attitude displayed by city administrations toward the industrial concerns within their domains. This situation, whereby those of greatest responsibility have no voice in the city government, also must be blamed for much of the racketeering, graft and other abuses with which many of the larger cities have been afflicted in recent years and which have been paid for in part by industry.

Depression Brings Extravagance and Bureaucracy Into Limelight

Manufacturers in small cities and towns also have been subjected to the curse of high taxes resulting from wasteful government. Several years ago many of these smaller communities floated bonds for improvements far more extensive than were required. Under existing circumstances serious difficulty is being experienced in meeting the demands of this indebtedness. Taxes, of course, are unduly high and in many cases where a manufacturing concern stands out as the largest tax paying unit in the community the burden is manifestly unfair.

In state and federal governments the loudest complaints in regard to extravagance are those lodged against bureaucracy. The United States government always has been under fire from industry because of its excursions into various professional and commercial activities competitive to private business. In recent years there has been a tendency in certain states for the government to engage in work that could be performed better under private direction.

The present situation will have the beneficial effect of bringing out into the open many of the practices in the administration of government which are indefensible—especially in times of stress. The protest of the public against the maintenance of wages of public employes when wages in industry have been reduced will be registered with increasing pressure.

Industry will watch the house-cleaning of government with selfiish interest. It means much needed relief from a burden that has grown far beyond the bounds of reason.

THE BUSINESS TREND

State of Mind of Business Important Factor Now

YEAR-end analyses and forecasts issued during the past few weeks differed from those of other years in that less attention was devoted to the actual state of business and more to the state of mind of business men. Also there was a noticeable reluctance to make predictions of definite character.

The crop of business reviews produced a number of ingenious methods of summarizing conditions. One of the best was Col. Leonard P. Ayres' comparison of a business man to a poker player. Said this Cleveland banker-economist:

"In 1930 the average man sat at the game of business with a pat hand.

"In 1931 he was like the player who clings to a pair of deuces and discards the three orphans.

"In 1932 he will say, 'Give me five cards.' "

From a British source comes this definition: "A depression is a period during which the people do without the things their parents never had."

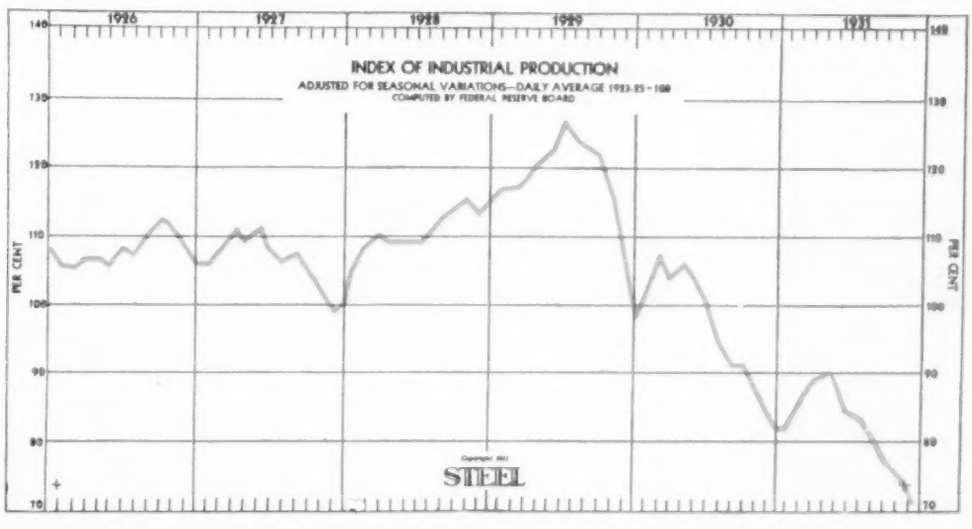
These two comments, expressed in lighter vein, are significant of two major trends in current thinking. The first is that many businesses must call for a new deal in 1932. The second is that people are beginning to wonder whether much of the so-called luxury associated with the easy money days of 1928 and 1929 really was desirable or wholesome.

The fact that sentiment now is shifting rapidly to the policy of deflation probably is one of the most important developments in this phase of the depression. Most industries now are better prepared mentally and physically to face the future than they were a year ago.

Prices Continue Downward Sweep as Production Lags at Year-end

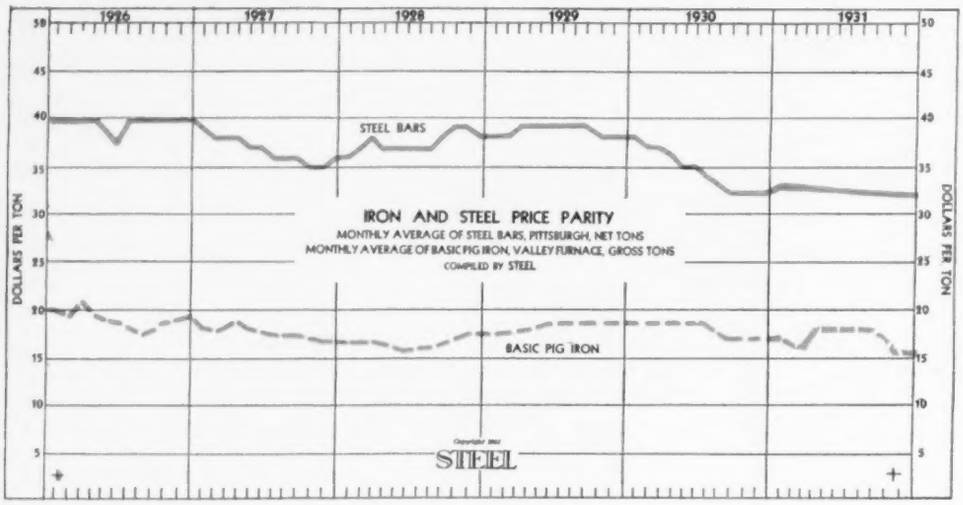
Statistics of the final month can serve only to emphasize what was already apparent. Production dropped sharply and the downward tendency in prices continued. Bradstreet's index of wholesale commodity prices dropped to $7.73 as of Jan. 1, the lowest since June, 1908, and with that single exception the lowest since 1901.

During December steel ingot output dropped to a rate of only 23.58 per cent of capacity. The total output for 1931 was 24,900,195 gross tons compared with 39,286,287 in 1930. The 1931 total was well above the total for 1921 which was 19,224,084 tons.



1930	
Nov.	84
Oct.	87
Sept.	91
Aug.	91
July	94

1931	
Nov.	72
Oct.	74
Sept.	76
Aug.	80
July	83



Steel Bars

	1931	1930
Dec.	$32.00	$32.00
Nov.	32.00	32.00
Oct.	32.00	32.00
Sept.	32.00	32.00
Aug.	32.00	33.00
July	32.00	34.00

Basic Pig Iron

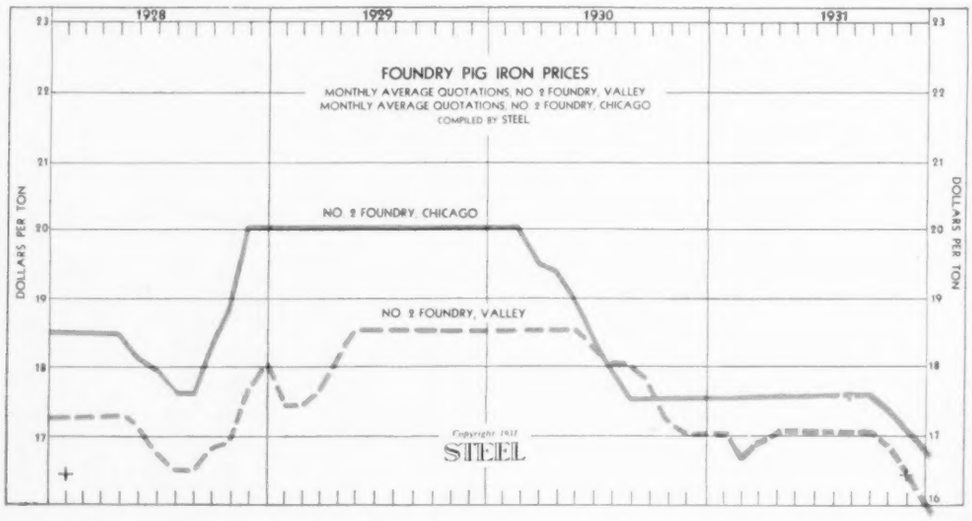
	1931	1930
Dec.	$15.00	$17.00
Nov.	15.00	17.00
Oct.	16.50	17.00
Sept.	17.00	17.75
Aug.	17.00	18.00
July	17.00	18.20

Range Between Prices of Pig Iron and Steel Bars Remain Steady

No change in the spread between steel bars and basic pig iron occurred during December. Steel bars at Pittsburgh held at the same quotation, $32, and basic pig iron at valley furnaces again was quoted at $15. During the past year the price trend for bars has displayed unusual stability, remaining at $33 for the first six months and dropping to $32 for the balance of 1931. While the price trend for basic pig iron has shown more irregularity, the fluctations have been orderly and within a narrow range, as in the first quarter prices dropped to $16.75 but returned in April to $17 and remained steady for six months. The last quarter brought the price to its present level of $15.

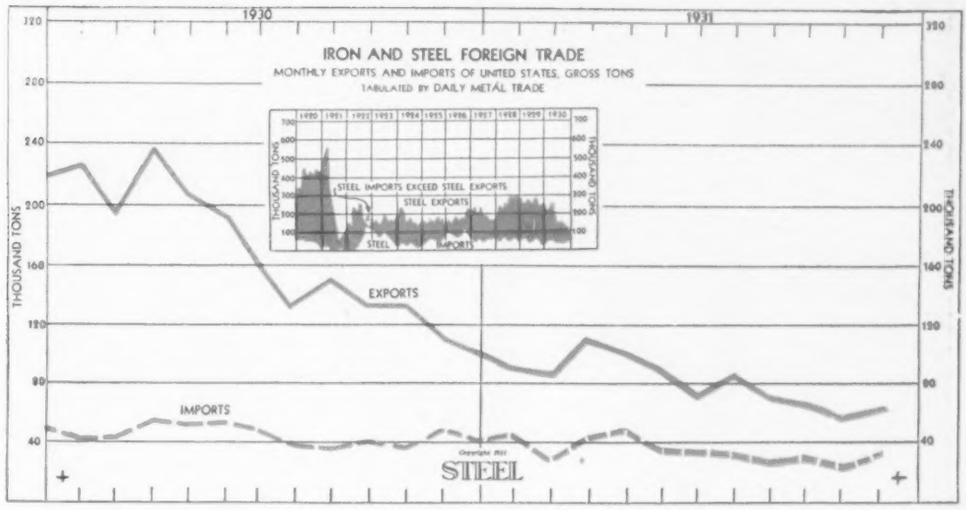
Average Quotations of Foundry Pig Iron Drop in Final Months

After remaining at $17.50 for 14 months, the average price for No. 2 foundry pig iron at Chicago experienced a slight drop in the last quarter of 1931. From $17.20, prices dropped slightly to $17 in November and reached a new low of $16.60 for December. The previous long period of price stability extended from November, 1928 to February, 1930 during which time a price of $20 was maintained. No. 2 foundry valley also took a decided drop from $16.85 in October to $16.25 in November, with a further decline in December for a new low of $15.75. Last year December quotations for No. 2 foundry at Chicago were $17.50 while valley prices were quoted at $17.



Monthly Averages

	No. 2 Foundry Chicago	Valley
Dec.	$16.60	$15.75
Nov.	17.00	16.25
Oct.	17.20	16.85
Sept.	17.50	17.00
Aug.	17.50	17.00
July	17.50	17.00



Exports

	Tons
Nov., 1931	59,556
Oct., 1931	59,335
Nov., 1930	111,979

Imports

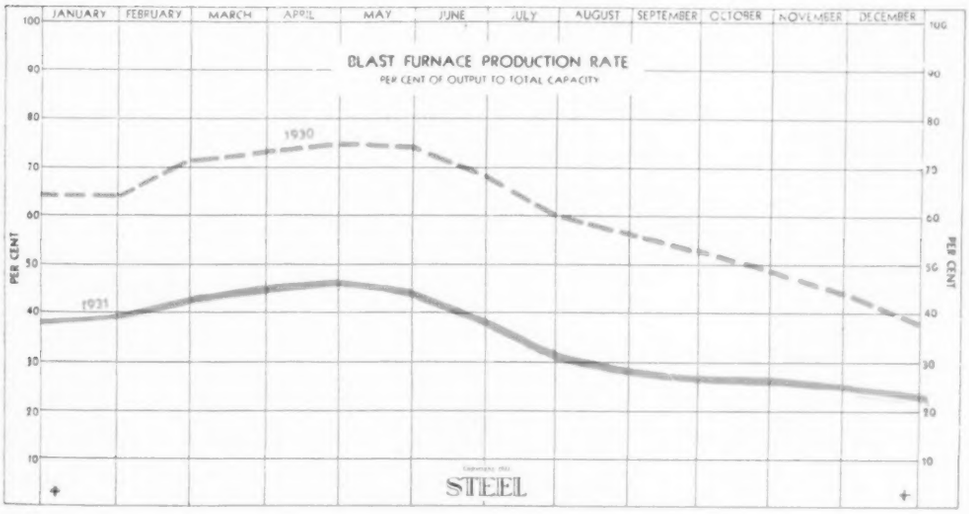
Nov., 1931	34,658
Oct., 1931	29,401
Nov., 1930	43,098

Volume of Foreign Trade in Iron and Steel Gains Slightly in November

Although it was small, the gain in iron and steel exports during November was the first occurring in this branch of foreign commerce since last July. In November exports of iron and steel totaled 59,556 tons compared with 59,335 tons in October and 111,979 tons in November last year. Despite the small gain, outgoing shipments in 26 of the 46 classes of products were smaller in November than they had been in October. The gain in imports was more pronounced, having increased from 29,401 tons in October to 34,658 tons for November, while for the same period last year imports gained from 38,344 tons to 43,098 tons.

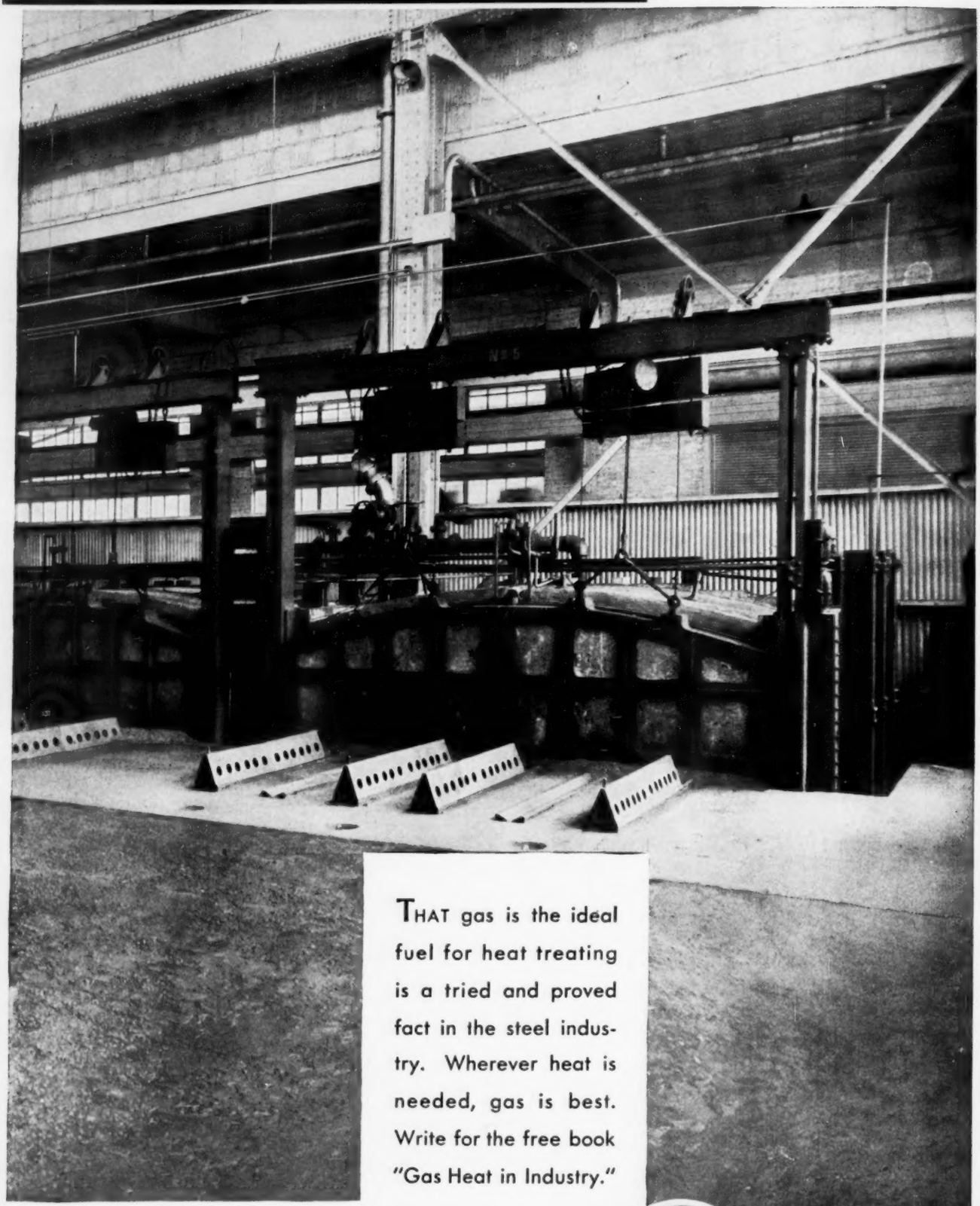
With Only 57 Active Stacks, Pig Iron Rate Is 22 Per Cent of Capacity

With an operating rate amounting to only 22.0 per cent of capacity and with a net loss of ten furnaces from the active list, pig iron production in December dropped to the lowest monthly figure since September, 1921. Furnaces in blast on Dec. 31 numbered 57, which is the lowest number on record. At the lowest point of the 1921 depression 69 stacks were in blast. However, the average capacity of stacks has increased. The peak for 1931 occurred in March with a total of 116 active furnaces, and during the remaining nine-month period a net loss of 59 furnaces occurred. In December last year the blast furnace operating rate was 38.1 per cent of capacity.



Per Cent

	1931	1930
Dec.	22.0	38.1
Nov.	25.5	44.1
Oct.	26.3	49.6
Sept.	27.0	53.8
Aug.	28.7	57.8
July	32.7	60.3
June	37.9	69.3



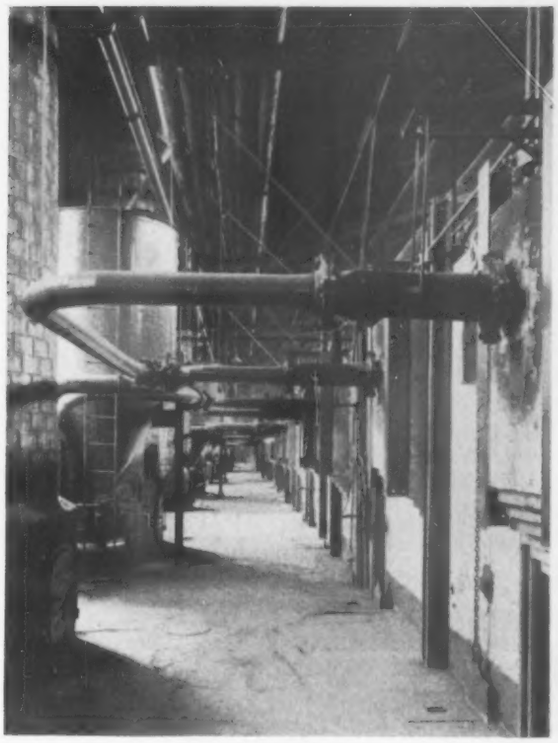
THAT gas is the ideal fuel for heat treating is a tried and proved fact in the steel industry. Wherever heat is needed, gas is best. Write for the free book "Gas Heat in Industry."

AMERICAN Gas ASSOCIATION

420 Lexington Avenue, New York

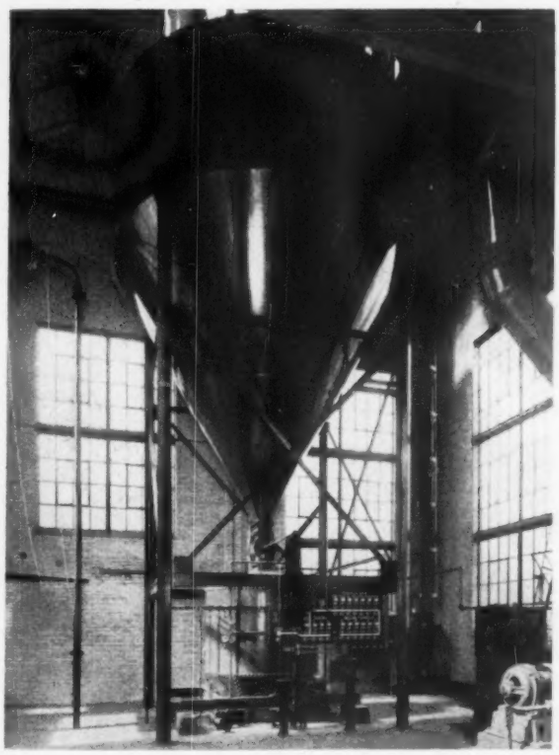
Pulverized Coal Firing Cuts Costs in Malleable Foundry

BY FRANK S. O'NEIL
General Manager, Ewart Plant,
Link-Belt Co., Indianapolis



Battery of 18 malleable iron annealing ovens fired with pulverized coal. Three are 20-ton; ten are 35-ton ovens

ENGINEERED to fit the peculiar foundry requirements for the production of malleable iron and Promal iron, a modern installation of pulverized coal equipment for melting furnaces, annealing ovens and boilers recently was placed in operation at the Ewart works of the Link-Belt Co., Indianapolis. The system was installed by the Whiting Corp., Harvey, Ill., and although its operation has been intermittent due to production requirements of the foundry, it has proved to be successful and profitable.



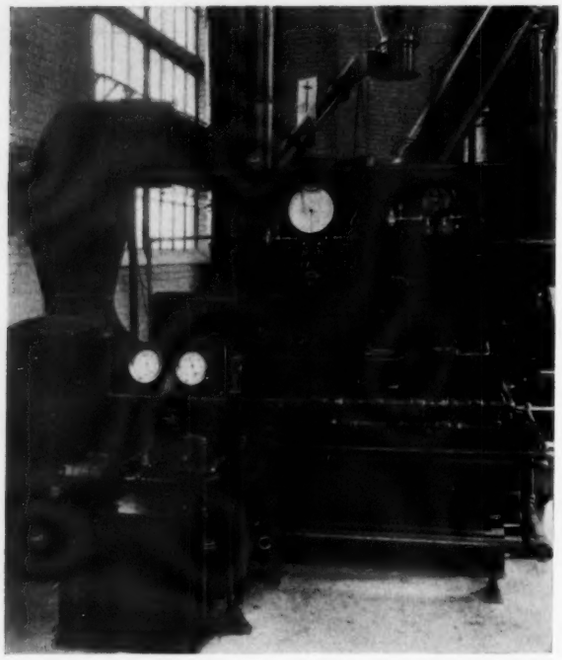
Corner of pulverizing plant showing 60-ton storage bin, 5-ton blowing tank, signal board and 4-inch pneumatic conveying line

The malleable foundry at Ewart works has been in use some 17 years, all the equipment hitherto being hand fired. The products have been high quality chain castings and industrial castings, produced in accordance with the latest foundry practice. To meet requirements the pulverized coal engineers had a high mark to shoot at but ultimately evolved an installation that produces substantial savings in labor, refractories and iron.

Cleanliness and orderliness of the plant are impressive. From the time of its receipt at the plant until it enters the furnace, coal is handled automatically, the entire system being absolutely dust-tight. All smoke from opening the fire doors therefore is eliminated.

The diagram on Page 25 shows the general arrangement of the various units and the equipment. The fact that all furnaces, ovens and boilers were already in use, most of them for a considerable period of time, illustrates the ease of applying pulverized coal to old equipment. Few changes were required and the entire system was put in without interruption to plant schedules.

The system as it now stands consists of crushing and pulverizing equipment, convey-



OIL-FIRED heater which furnishes hot air for drying coal in the pulverizer. Air is supplied at a temperature of 300 degrees Fahr.

ing lines, storage hoppers and feeding and firing units for the different furnaces. The capacity of the preparation plant is sufficient to permit adding more ovens or furnaces as production increases. The design will permit future additions without disturbing the main system or losing any part of the present equipment.

Tracing the path of the coal through the system, an incoming car is spotted over a receiving hopper underneath the switch track and the coal is dropped into this hopper. From there an inclined steel apron conveyor carries it to a double-roll crusher in the preparation building alongside the track. This crusher has a capacity of 36 tons per hour. The apron conveyor is equipped with a magnetic head pulley to take out the tramp iron before coal enters the crusher. The crushed coal, reduced to 1¼-inch lumps, drops into a bucket elevator, which carries it to the concrete storage silo of 700-ton capacity, shown in an illustration.

Pulverized and Dried

From the silo the coal is fed by a gravity chute into the pulverizer or "kiln roller mill," where it is pulverized and dried at the same time. With the kiln mill no separate dryer is required, thereby reducing the cost of the preparation equipment and subsequent operations. The air for drying the coal in the pulverizer is heated in a separate oil-fired heater, and enters the pulverizer at a temperature of 300 degrees Fahr. This gives a temperature of from 110 to 150 degrees Fahr in the pulverized coal discharge pipe.

Automatic control is provided so that the heater is shut off when the air reaches the desired maximum temperature. This can be regulated to suit conditions. The excess air used for drying passes through a cyclone collector at the top of the pulverizer for cleaning and is discharged outside the building. The degree of fineness is under rigid control and due to using air separation the desired fineness is maintained easily. The dry pulverized coal is discharged into a 60-ton capacity storage hopper and is ready for distribution to the various furnaces and ovens.

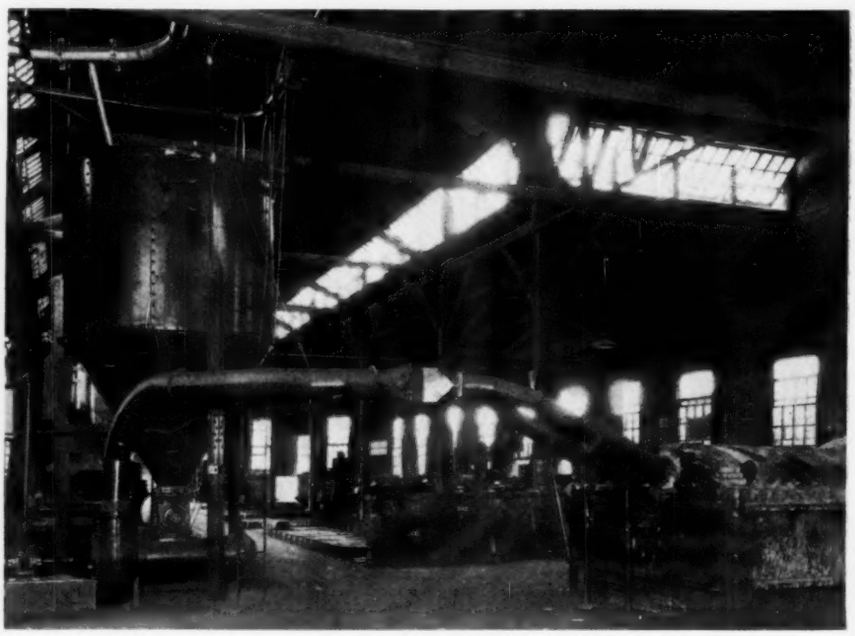
Distribution is made by means of a pneumatic conveying system controlled from a central signal board at the main storage hopper. The coal is conveyed through 4-inch standard steel pipe, direct to the various units to be fired. Before dispatching it to the furnaces the coal is fed into a 5-ton weighing tank mounted on a scale with weightograph attachment, which accurately records the amount of fuel used.

A dust collecting line is installed, parallel to the conveying line, which removes the fine coal dust carried off by the cyclone collector located at one of the furnaces.

Pushbutton Control

To illustrate the automatic operation of this system, let it be assumed that coal is needed for a given furnace. The furnace attendant actuates a pushbutton and immediately a colored light appears on the central signal board, telling the operator there that coal is desired at the furnace in question. The operator then presses a button which releases the switching valve at the furnace and allows the furnace attendant to open the valve by pulling the pendant chain. Automatically a different colored light flashes on the central control board, informing the operator that the valve at the furnace is open, ready to take coal from the main feed line. The coal is conveyed by compressed air under 15 or 35 pounds pressure and as soon as it reaches a predetermined level in the storage bin at the furnace, an automatic limiting device closes the valve and stops the coal flow. At the same time a third light flashes on at the central control board to signal the operator that the furnace has been supplied.

The system is so interlocked that the switching valves for drawing coal from the main line cannot be



Malleable iron melting furnace of 15-ton capacity, fired with pulverized coal. Main fuel line and dust collecting line are shown in the upper left

opened by the pendant chain until the operator at the central control board has released the valve. The safety manhole cover on each individual storage hopper is also interlocked so that no coal can be conveyed into the hopper if the manhole cover is not sealed properly. The entire transport system is worked out for automatic operation and precise control, avoiding any possibility of overfilling the hoppers or spilling the coal. The cost of transporting coal by compressed air averages about 6 cents a ton.

When the furnace hopper is filled with coal and ready for operation, a screw feeder attached to the bottom of the hopper feeds the coal at the desired rate, positively controlled for combustion by a variable-speed transmission. As the pulverized coal enters the exhauster it is picked up by the air stream and delivered to the burner. Here the air and coal, in proper proportions, are mixed thoroughly and blown into the furnace. Valves are provided that give close adjustment of air and permit close control of combustion. This completes the cycle of operation.

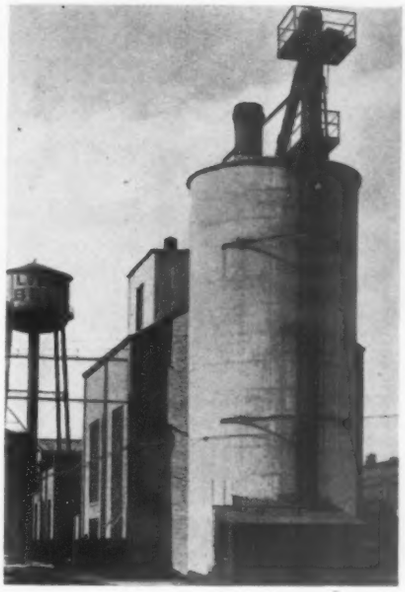
Only a small amount of ash is formed when burning pulverized coal. In the case of the melting furnaces, this passes off with the slag and other refuse; in the boilers it is deposited on the bottom of the furnace and must be removed occasionally the same as with hand firing, but not as frequently.

Three Types of Burners

Three different types of burners are used. The melting furnaces are equipped with stream line burners, which give a low velocity flame required for metallurgical melting. The annealing ovens are equipped with high-low velocity burners, which give a flame of variable length—a short flame for starting and a long flame for bringing up the front of the oven and holding an even temperature. Each of the three 20-ton ovens has one burner; the ten 35-ton ovens are equipped with two burners each.

The three 200-horsepower H. R. T. boilers used for heating the entire plant are equipped with the turbulent type of burner, which gives a short, hot, turbulent flame suitable for this class of work. The secondary air for combustion is controlled by an air gate with atmospheric intake.

Aside from the convenience of automatic closely controlled operation, this system is making definite savings in both labor and materials. On the annealing ovens, for instance, several hours have been cut off the cycle of operation. Because the temperature throughout the entire oven is uniform, castings can be placed in any part of the oven regardless of size, and are annealed thoroughly.



This 700-ton concrete silo is used for storage of coal screenings. Pulverizing plant is in the background

A marked saving of fuel cost is achieved. Formerly, with hand firing, these same ovens required 752 pounds of fuel per ton of castings annealed; now, with pulverized coal, the consumption has been brought down to about 500 pounds per ton.

A number of economies have been effected on the melting furnaces. The elimination of hand firemen is a large item. A higher percentage of good castings and more uniform analysis of iron are important results. Hot fluid iron is obtained, 2700 degrees Fahr. and above, at the spout. It is also found that the iron retains its temperature in the ladle longer than with hand firing. Ninety per cent of the heats so far have come out minus or plus five points in carbon. Less oxidation and less wear on the furnace lining are other items; also a better ratio of coal to iron.

On the boilers, which are operated only for heating the plant, there is the double saving of labor and fuel, plus easier control.

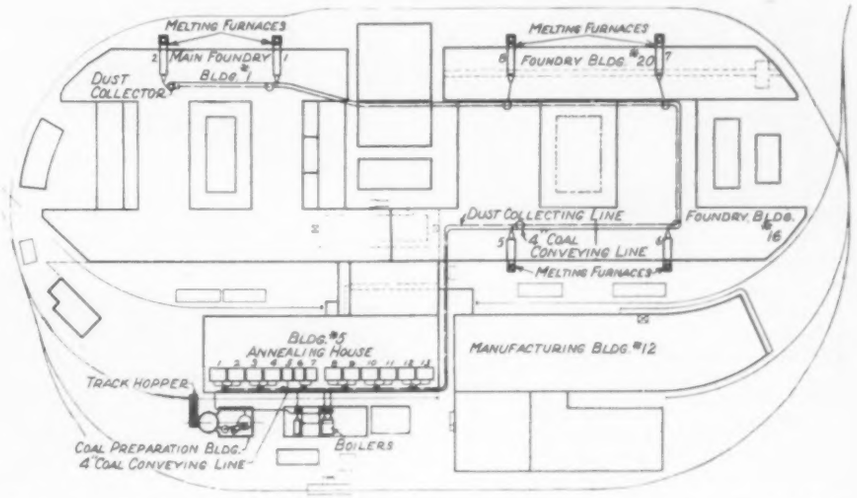
Malleable Iron Institute Elects 1932 Officers

E. E. Griest, Chicago Railway Equipment Co., Chicago, was elected president of the Malleable Iron Research institute at a meeting of the organization in Cleveland recently. L. P. Henry, Maumee Malleable Castings Co., Toledo, O., was named vice president, western section; and P. R. VanDuyne, Meeker Foundry Co., Newark, N. J., was named vice president, eastern section.

In addition to Mr. Griest, directors for the current year will include H. D. Hunter, Dayton Malleable Iron Co., Dayton, O.; C. L. Liebau, Decatur Malleable Iron Co., Decatur, Ill.; R. E. Bryant, Jefferson Union Corp., Lockport, N. Y.; W. L. Beaudway, Chicago Malleable Castings Co., West Pullman, Ill.; M. B. Falvey, Kokomo Malleable Iron Works, Kokomo, Ind.; H. L. Steeves, Rhode Island Malleable Iron Works, Hillsgrove, R. I.; George R. Metcalf Jr., Erie Malleable Iron Co., Erie, Pa.; L. D. Harkrider, Glancy Malleable Corp., Waukesha, Wis.; and R. J. Teetor, Cadillac Malleable Iron Co., Cadillac, Mich.

Convenes at Honolulu

James A. Farrell, president, United States Steel Corp., as chairman of the National Foreign Trade council has called the first meeting of the council to be held outside the United States, at Honolulu, T. H., May 4-6.



Diagrammatic layout of malleable plant showing relative location of coal pulverizing plant, boilers, melting furnaces, annealing ovens and fuel distribution system

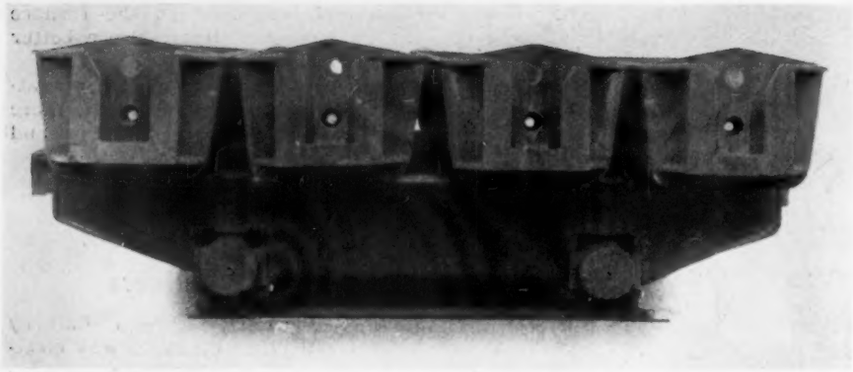


Fig. 1—A charging box car carrying four boxes. The car as well as the boxes are of welded steel plate construction

Charging Boxes and Buggies Built of Welded Plates

WELDED steel plate charging boxes and charging box buggies which feature lightness, economy, durability and increased capacity are being used in the open-hearth plant of the Lukens Steel Co., Coatesville, Pa. This equipment, shown in Fig. 1, was designed and built by Lukenweld Inc., a division of the company.

In general appearance, the welded box looks much the same as the conventional type box. As is to be seen in Fig. 2, it is rectangular in shape, has slightly sloping sides, and is equipped with a peel holder at one end. Pinholes are provided in both ends for stockhouse handling.

The sides and bottom are of one piece formed to shape and the ends are welded into place. A reinforcing strip is welded along the top edge of the sides and the back end and the peel holder is built up of gas-cut plate welded into place and supported by horizontal stiffening plates.

The box is about 83 inches long, 28 inches wide and 21 inches high, weighs about 1050 pounds and has a content of approximately 30 cubic feet. It weighs about 10 per cent less than the usual box and can be built at a cost of about 5½ cents per pound.

In service of about 12 months, the boxes have shown ability to withstand residual strains in the peel end and depreciation has been small.

Fig. 3 shows the top and side view of a charging car body designed to carry four charging boxes. It will be seen that the bed and sides of the buggy are in one piece bent to shape and gas-cut as necessary for welding the end and bumper pieces and the wheel housings in place. Pieces of plate welded to form supports for the axle bearings eliminate the usual type of journal box bearings.

The underside of the car body is reinforced by means of plates bent into channel sections to take care of longitudinal and transverse stresses and to accommodate the spring mountings on the wheels. Particular care was given in this design to the arrangement of the box sections supporting the ends of the body in such manner as to carry the strains of a train of cars in motion from axles to the bumpers through the spring line.

Charging car buggies of this design are about 30 per cent lighter than buggies of similar capacity built by the usual method. Their cost varies between 6½ and 8½ cents per pound, depending upon size, and their weight ranges between 4000 and 12,000 pounds.

As pointed out by J. D. Walters, superintendent of the Lukens open-hearth department, the new type of construction for both charging boxes and cars effects considerable saving in weight, reduction in cost of power for transportation purposes being approximately 30 per cent.

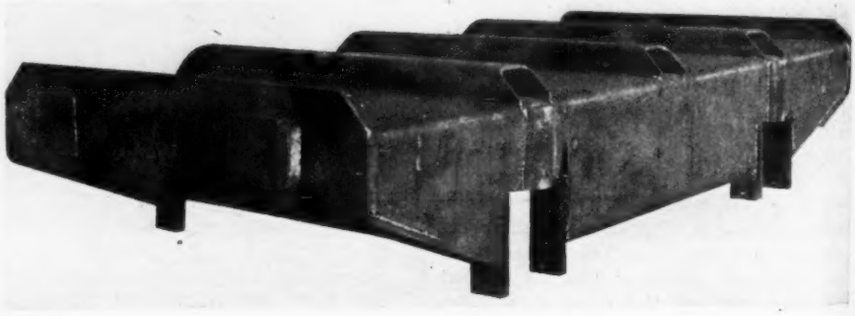
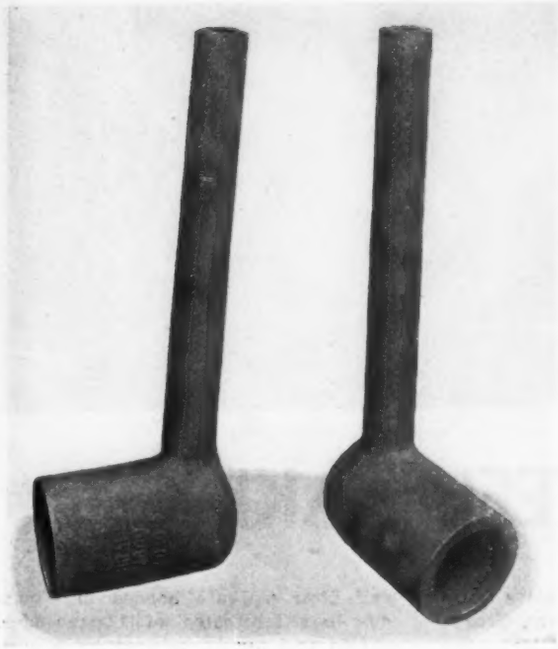


FIG. 2 (Above)—A welded steel plate charging box showing the peel holder on the left end. Fig. 3 (Right)—Charging box car body showing a few details of construction

Develops New Process for Electric Pipe Welding

In connection with a conference on welding held recently in Madison, Wis., and sponsored by the University of Wisconsin, Prof. Edward Bennett of the university's electrical engineering department demonstrated a new electrical welding process which he has developed.

The process is regarded as important in pipe welding and is believed likely to bring about some changes in present processes. The development will be exploited by the Wisconsin Alumni Research Foundation which has made application for patents. When patents are granted, the foundation proposes to license use of the process.



THESE PIPES NOT FOR SMOKING PURPOSES: Cast from a chrome-nickel alloy known as Fahralloy F-1, a product of the American Manganese Steel Co., Chicago, these acid handling pipes are employed in the manufacture of commercial fertilizer, being subject to temperatures up to 2100 degrees Fahr., as well as abrasion, and corrosion of sulphuric and hydrochloric acids. The alloy contains 16-19 per cent chromium and 35-38 per cent nickel. Light weight and unusually long life are advantages claimed

Engineers Inspect Newly Developed Equipment for Rolling Mills

SEVERAL hundred rolling mill engineers from all sections of the country on Jan. 6 attended an exhibition of new developments in rolling mill machinery at the Youngstown, O., plant of United Engineering & Foundry Co.

A new tandem four-high cold strip mill just completed for the Otis Steel Co., Cleveland, to produce steel strips 72 inches wide, the greatest width ever rolled cold in any metal in the form of strip or by the continuous method, was of major interest.

In addition to construction improvements of mechanical and electrical nature, the mill is equipped with a number of auxiliary machines never before used. A patented uncoiler receives the coils as they come from the hot strip mill, detaches one end of the coil and delivers it into the continuous cold mill. Guides of a new type on the mill work in conjunction with this operation.

The strip then passes through the different mills in the tandem, and is taken by another new invention, the reel guide machine, which automatically delivers it upon the cold strip reel. When it is fully wound, the drum of the reel collapses, permitting the material to be removed. The final product is delivered with no manual operation other than the use of control buttons.

A new twin-motor cold strip mill, another of the series of experimental units constructed by the United Engineering company to demonstrate revolutionary changes in rolling mill practice, attracted considerable attention. In this machine, the conventional pinion stands and gear drives of earlier usage, have been completely discarded, and the mill is driven by two motors, one for each of the two working rolls, properly synchronized.

The mill is of the four-high type, but so flexible in its application as to duplicate almost any desired strip rolling condition. It can be operated with almost any size or type of working rolls, and quickly changed from one to another. It works at various and desired speeds, and also has the automatic reel equipment.

Handbook Catalogs Metallographic Equipment

Optical instruments for examining and analyzing metals are discussed in a new handbook for metallographers recently issued by the Bausch & Lomb Optical Co., Rochester, N. Y. The 125-page book includes articles, tables and references prepared by the Bausch & Lomb scientific bureau, information for the person or organization about to establish a metallurgical laboratory, discussion of ultra violet photomicrography and brief comment on spectrographic analysis.

The handbook is illustrated beautifully and presents some exceptionally interesting photomicrographic reproductions of various metals at magnifications up to 12,000 diameters. A complete catalog and price list of Bausch & Lomb instruments and accessories is included in the work, a copy of which will be sent gratis to any organization requesting it.

Electric Furnace For Copper Brazing

FOR fabricating steel tubing from strip by the copper brazing process, the Bundy Tubing Co., Detroit, operates three electrically-heated brazing furnaces. At present the company is installing a fourth furnace which will be used in the brazing of miscellaneous steel parts.

These furnaces were developed by the General Electric Co., Schenectady, N. Y., which for several years has employed electric furnaces with controlled atmospheres in copper brazing steel parts for electric refrigerators and other products. The new furnace which the Bundy company is installing is of a type which has been nicknamed the "Zeppelin" because of its long cylindrical shape and the fact that it is supported several feet above the floor level.

Elevators at Ends

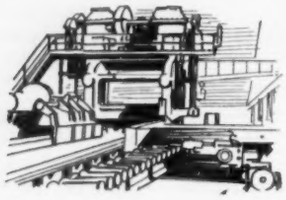
The furnace has an elevator at each end, one for charging and one for discharging, which in the raised position fit against suitable seals. The parts to be joined are fitted together with a thin copper wire fastened over the joint, then are placed on a car on the charging elevator and introduced into the furnace. The cars are pushed gradually through the furnace and finally are removed by the elevator at the discharge end.

During travel of the work through the furnace, the copper is melted and by capillary action enters the joint between the steel parts. When cooled this brazed joint has approximately 75 per cent of the strength of steel. At all times the furnace has a reducing atmosphere because the presence of oxides would result in imperfect brazing. To provide this atmosphere the Bundy plant utilizes an electrolene gas producer also developed by the General Electric Co.

Ordinary city gas, mixed with a small amount of steam, is fed into the producer which by means of electric heat cracks the hydrocarbons into carbon and hydrogen. The carbon in turn combines with the steam to form carbon monoxide and hydrogen. The resultant gas, known as electrolene, consists of about 75 per cent hydrogen and 20 per cent carbon monoxide, both of which have excellent reducing properties.

PROGRESS IN STEELMAKING

FATIGUE of workmen engaged in handling coils of hot-rolled strip on and off reels has been greatly reduced at an Ohio mill by the installation of reels mounted horizontally at floor level. The units, similar to a turntable with a rounded knob centrally located, are mounted on roller bearings.



INGOTS 22 x 24 inches weighing 8700 pounds are being converted to 8-inch blooms in 17 passes with six turns on a 44-inch blooming mill in the Pittsburgh district at the rate of 130 tons an hour. And the mill is steam driven. Not a bad appetite for the soaking pit boss to keep appeased and for the schedule clerk to jot down on his book.

♦ ♦ ♦

Outside illumination of a steel plant in Cleveland now is controlled by a photoelectric relay. At dusk, or on unusually dark days, this relay automatically causes the yard lights to be turned on. This installation is one of the results of this company's discovery that poor illumination has a measurable adverse effect on production.

♦ ♦ ♦

With modern blast furnaces producing gas having a fuel equivalent ranging from 400 to 500 tons of coal per day, the trend is toward a wider use of this gas for underfiring coke ovens, for firing rolling mill heating furnaces and for melting open-hearth charges. On account of the heat value of blast furnace gas being lower than coke oven gas, the less intensive flame effects a more uniform heating of coke oven walls and gives a better grade of coke.

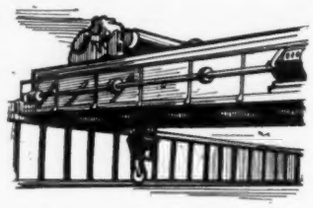
♦ ♦ ♦

Savings ranging from 7 to 9 tons of acid a day are being effected by a wiremaker in the Chicago district, with a consequent saving of 3 to 4 tons of virgin steel, by the use of a recently perfected nondestructive pickling solution and inhibitor. The new combination is composed of 73 to 75 per cent sulphuric acid, a maximum of 1 per cent carbonaceous material, dissolved organic matter and water. Scale is cleaned from the surface of the steel by the acid, destructiveness to the virgin steel being prevented by the presence of the carbonaceous and organic material. Steel, even of high carbon content, can be left immersed in the solution considerably longer than is required without danger of being overpickled.

BY combining ferromanganese, ferrosilicon and ferrocarbon-titanium, a steelmaker in the Philadelphia district has developed a deoxidizer for open-hearth steel which produces a fusible slag with the nonmetallic impurities in the ladle.

♦ ♦ ♦

No longer will the shrill blast of locomotive or other signal whistles around the plant disturb steelworks executives in session if windows of the conference room are equipped with a newly developed metal silencer and air filter. A Maxim silencer and filter pad are housed in a window box fabricated of 12-gage steel sheets and air is induced by a fractional horsepower motor and suction fan at the rate of 250 cubic feet a minute. Tests disclose that noise is no more perceptible when the unit is employed than when the windows are closed.



AN air brake system built originally for automobiles recently has been applied to hot metal cranes equipped with antifriction bearings on trolleys. The unit is attached readily to the mechanical brake which still is available for operation in case the supply of air fails.

♦ ♦ ♦

Tests conducted by an Ohio producer of strip steel on bell-type electric furnaces for bright annealing coiled stock show high uniformity of treatment, low fuel and labor costs, a decrease in the amount of reannealing requirements, a reduction of rejected material and an increase in production.

♦ ♦ ♦

A double-compartment scale car, now being operated in the stockhouse of a blast furnace, is equipped with a modern recording system. A record of each charge is accomplished by a tape-printing recorder, which prints the weights on both the original and carbon copy. Opposite each weight is printed the material handled, such as the number of the ore, limestone and miscellaneous. The car also is provided with airbrakes.

• HUNTER •

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◆

FOUNDRIES are among the largest users of steel wheelbarrows. The steel type also is in almost exclusive demand for export

◆

Large Uses of Steel In Small Ways

208th Article ◆ Wheelbarrows

UNDER normal conditions 9000 to 10,000 tons of steel is consumed annually in the construction of wheelbarrows. In 1930, the last year for which full returns are available, approximately 341,000 were built. Of this number about 33 per cent were all-steel; 55 per cent all-steel except for wooden handles; and 12 per cent wooden wheelbarrows, for which only a little steel is used.

All-steel wheelbarrows require an average of about 60 pounds, and on this basis they consumed in 1930 approximately 3375 tons. Steel wheelbarrows with wooden handles take about 53 pounds, according to trade estimates. Hence, this type of barrow consumed 4870 tons. The wooden wheelbarrow requires about 20 pounds of steel as an average, and consequently this type consumed 410 tons. The total amount of steel in 1930 was 8655 tons.

Production Slumping

The year was subnormal, but on the other hand 1929 was above normal. In that year, with production at approximately 448,000 units, the wheelbarrow industry consumed approximately 11,500 tons.

The trend in production over the past decade has been downward, although the ratio of steel required has been steadily upward. The tendency in output is attributed principally to the development of mechanical handling equipment, particularly in road-building and industrial plant operations. Moreover, steel has made wheelbarrows more durable, prolonging their life.

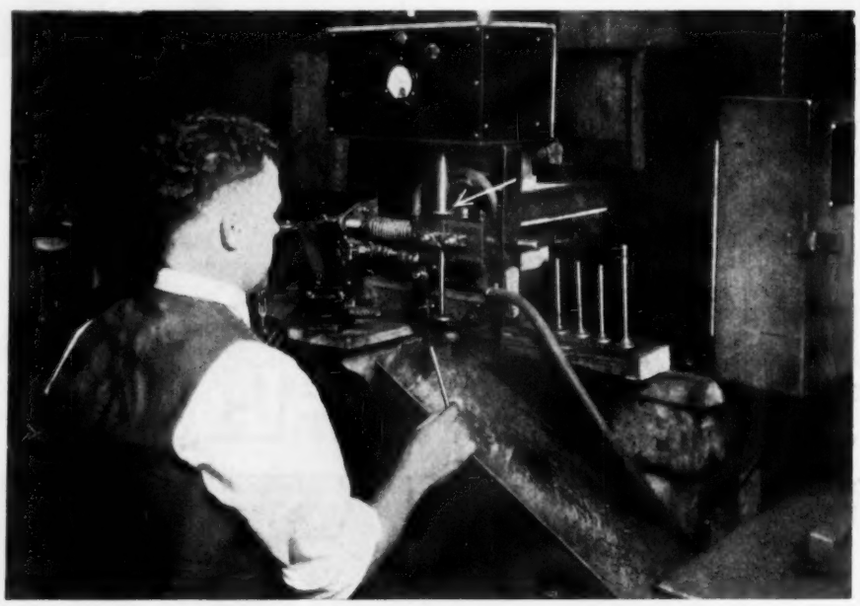
Steel for wheelbarrow construction received an impetus early in this century when concrete came into general use. At the same time the steel barrow found wider application in foundries, steelworks, chemical and other industrial plants.

Incidentally, the steel wheelbarrow, in contrast with the wooden type, has since come into almost exclusive demand for export, for India, in particular, and for the Philippines and South Africa. South American mining companies have purchased large numbers of steel wheelbarrows in past years. Exports in 1930 reached a total of 41,000.

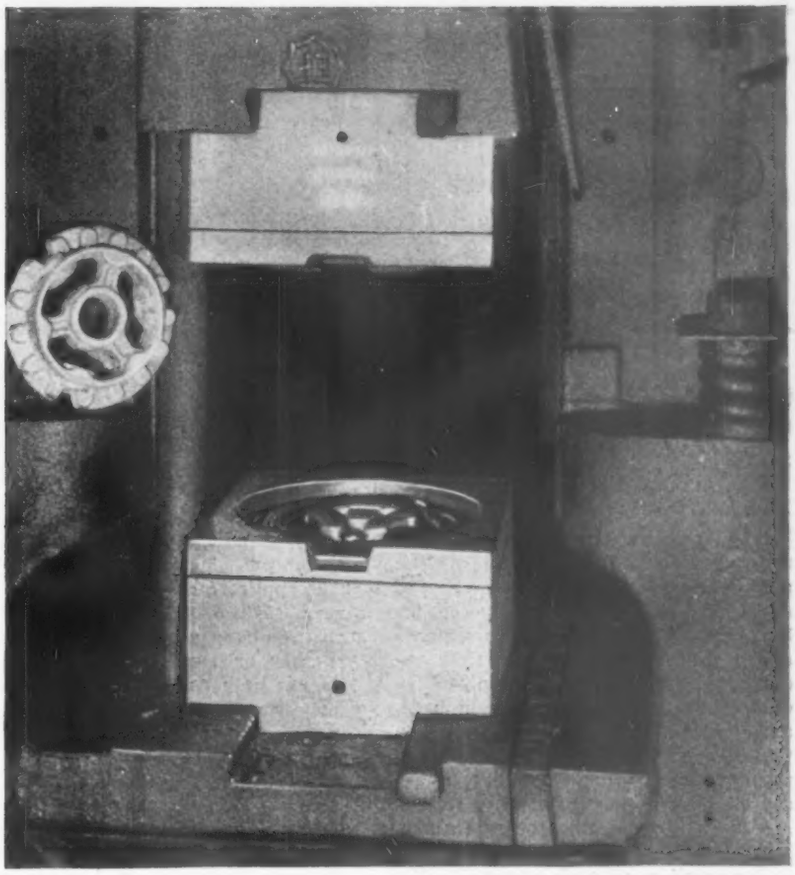
Some Types Heavier

While 60 pounds represents the average weight of all-steel wheelbarrows, certain types, particularly those used in foundries, are heavier. The latter weigh up to 137 pounds. The coal industry requires an unusually heavy wheelbarrow, from 90 to 110 pounds or more. The railroads, normally large buyers, favor a steel barrow with wooden handles, weighing 50 to 55 pounds.

The tray for the 60-pound all-steel wheelbarrow usually is made of 16-gage open-hearth black sheet, and the handles of steel tubing with an inside diameter of 1 inch. The channels, used in the legs, are about 1½-inches wide and ⅛-inch thick. Wheel spokes are 7/16-inch diameter, and the tires are 1½ inches wide and ⅜-inch thick. The spokes, according to the precedure at some plants, are upset first, then bulldozed so as to spread out the ends and fill the countersunk holes in the tires. A cast malleable iron wheel is used in another design.



ELECTRIC EYE CONTROLS HEAT TREATING: Tip hardening of valves to resist wear has been a difficult operation until the application of the photoelectric cell to the job, at the plant of Thompson Products Inc., Cleveland. The valve is clamped in the machine by a pneumatic chuck, and electric current passed through the tip. When the tip is at the correct temperature, according to the color of the hot steel, a Westinghouse photoelectric relay is actuated, which shuts off the current and opens the chuck, releasing the valve into an oil quench. Arrow points to the photoelectric cell



Illustrated at right are Heppenstall Nickel Alloy Steel "Hardtem" die blocks in plant of Union Switch & Signal Co., Swissvale, Pa. Mfd. by HEPPENSTALL COMPANY, Pittsburgh, Pa.

HEPPENSTALL... KNOWS NICKEL ALLOY STEEL DIE BLOCKS PERFORM BETTER LONGER

For a generation the Heppenstall Company has occupied a leading position as a manufacturer of die blocks. All Heppenstall alloy die block steels contain Nickel and are made in the company's own furnaces, under close technical supervision. The addition of Nickel imparts the uniformity of structure, ease of heat treatment and shock resistance so necessary in die block service.

Judge by this statement from the Heppenstall Company regarding the use of Nickel Alloy Steel in Heppenstall "Hardtem" blocks:

"Modern drop forging die blocks must not only withstand the heavy stresses developed in service, but the chemical composition of the die steel must be such as to minimize the tendency toward warping and disintegration by abrasion and fire checking, for the drop forging of today is a near-finished product... It is obvious therefore that the die steel must be of the highest quality".

Like many other leading manufacturers of forge and mill equipment parts, Heppenstall knows that "Nickel Alloy Steels perform better longer".

Dependable materials are the best assurance of dependable performance

Send for "Buyers' Guide to Nickel Alloy Steel Products."

INCO NICKEL TRADE MARK

Nickel
ALLOY STEEL
PERFORMS BETTER LONGER

THE INTERNATIONAL NICKEL COMPANY, Inc.

Miners, refiners and rollers of Nickel... Sole producers of Monel Metal

67 Wall Street, New York, N. Y.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Gas Carburizing

Testing for efficiency in gas carburizing methods, by D. W. Frye, in Industrial Gas, December, 1931, *p.* 15, 1½ *pp., 2 illusts.*

Many manufacturers have at times shown some hesitancy in adopting the gas carburizing method because of skepticism as to the ability of a carbonaceous gas to meet requirements as to case depth and the time required for carbon penetration. However, regardless of the medium used, solid or liquid, it is ultimately a gas that carries carbon to the steel surface for absorption. Results of research on carburizing steel with gas are revealing its adaptability to commercial needs.

For small work such as small tools, bolts, small axles, etc., the rotary carburizing retort furnace has found favor, while for larger work such as gears, rolls or heavy shafting, the vertical stationary retort furnace is better adapted. Both employ natural or manufactured gas as the carburizing medium.

In a comparison of the gas and pack methods of carburizing, test pieces of S.A.E. 3120 steel were carburized respectively in a rotary retort carburizing furnace with natural gas, and in a carburizing box using solid compound. Both furnaces were heated and held at 1750 degrees Fahr. The time required for the penetration was 14 hours in the gas furnace and 20 hours in the pack furnace.

—STEEL, 1-11-32

Chromium Plating

Comment on present status of chromium plating, by W. Blum, in Metals and Alloys, December, 1931, *p.* 365, 1 *pp.,* 1 *illust.*

Properties of chromium make it suitable for various applications, unfitted for others. Its hardness gives it wear resistant properties, but its brittleness must also be taken into account. To some degree these properties are under control by varying the temperature of deposition.

Since plated chromium coatings are porous and often contain fine cracks, they are not sufficiently impervious to protect underlying steel from corrosion. They are oxide coated in the passive state, and do not give anodic protection. Hence, coatings of softer metals such as copper and nickel, that can be buffed to close up pores, are essential as a base for the top coating of chromium.

The author sees as a likelihood the substitution of stainless steel for chromium plating in certain automotive applications where abrasion is severe. While chromium plate is used on the piston pins of some automobile engines, brittleness of the deposit bars its use on most bearing surfaces.

—STEEL, 1-11-32

Alloy Steels

Discussion of basic principles of corrosion and various alloys resistant to heat and corrosion, by T. Holland Nelson, in Engineers and Engineering, December, 1931, *p.* 262, 5 *pp.,* 4 *tables,* 5 *illusts.*

A simple nontechnical presentation of the mechanics of corrosion and methods taken to prevent it, this article assists the semitechnical and lay mind to obtain a clearer picture of the problems involved. Brief mention is made of Brearley's early work with chromium steels. Tables are presented giving rates of corrosion of chromium and chrome-nickel steels in various acid concentrations.

Dr. Benno Strauss in 1927 described experiments with chrome-nickel irons for heat-resisting applications, his discoveries paralleling those of Brearley. The author points out the importance of a proper balance between the amounts of chromium and nickel used in alloying, since the chromium, although providing resistance to corrosion, tends to produce grain growth and generally lower physical properties. Nickel retards this action.

—STEEL, 1-11-32

Tool Shanks

Tool shanks of open-hearth steel, in Maschinenkonstrukteur - Betriebstechnik (Germany), Sept. 10, 1931, *p.* 187.

Some advantages resulting from the use of taper shanks of cheaper grades of steel butt welded to drills, reamers, etc., of high-speed tool steel, are pointed out in this article. Where high-speed tool steel is welded onto a taper shank of a cheaper grade of steel, diameter of bar stock of the high-speed steel is not governed by the largest diameter of the taper shank but simply by diameter of the tool itself. Bar stock consequently is smaller in diameter and requires less machining than in the case of a one-piece tool.

With properly performed butt welds, tensile and torsion tests never broke specimens of tools at the weld. This method, however, is not recommended in connection with more inexpensive grades of tool steel, as in that case the cost of welding would be higher than the difference between the prices of the two grades of steel.

Data are presented showing savings effected with various Morse taper shanks by use of this welding method.

—STEEL, 1-11-32

Resistance Welding

Production welding of steel automobile bodies, by J. D. Rahn, in Welding, December, 1931, *p.* 802, 3 *pp.,* 5 *illusts.*

At the Philadelphia plant of a large manufacturer of steel automobile bodies, more welding is performed than in any other plant of its type in the world, with 824 welders using a daily average of 60,000 kilowatt hours. In 1928, under normal production, 4000 complete bodies, in addition to 12,000 assembled doors, constituted a common daily shipment.

Electric arc and oxyacetylene welding are being supplanted by resistance welding which, because of its high degree of perfection and adaptability to difficult positions, has been found most suitable for production work. An overhead conveyor system and complete jigging for alignment assist welders in their work. Before the steel enters the large presses, much of it passes through a flash welder which operates on the principle of a butt welder, joining two pieces of steel edge to edge to form a large single sheet. Pressure and current for the weld are maintained only long enough to insure perfect homogeneity.

The entire side of a body is pressed from a single sheet of steel. Reinforcements are welded to the panel by various methods of spot welding. The panel is then placed in a jig which may require as many as 24 clamps, and is carried on an overhead monorail to various welding stations. Ingenuity is displayed in the design of electrodes, practically every welding job requiring special ones.

—STEEL, 1-11-32

Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

Multiple Spindle Machines Embody Improvements

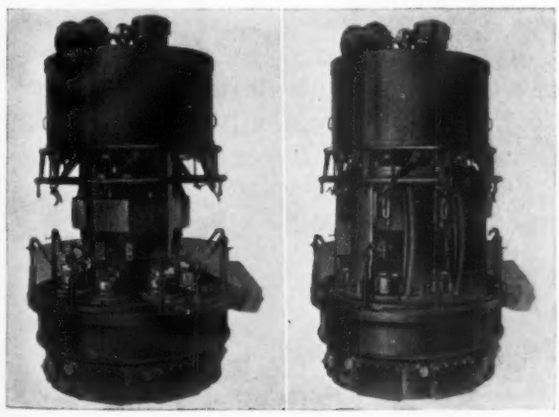
Bullard Co., Bridgeport, Conn., announces a new line of multaumatics both chucking machines and center lathes. These machines, designated as type D, are shown in the accompanying picture which reveals that they are, more than ever before, capable of handling mass production involving automatic operations upon chucked or centered work requiring multiple spindles combined with multiple tooling at each spindle and maximum speeds and feeds for each set of operations.

To add to adaptability, type D multaumatics are offered, if desired, with eight spindles. Modern design incorporates heavier construction, with resultant absorption of vibration, and embodies a variety of multiple tool carrying heads and drill heads to meet any production requirement. Increased power, increased feeds and speeds and antifriction bearings also are features. Type D units in either six or eight spindle models, afford to users a new conception of multiple spindle station-to-station production methods. Rigidity in the new type column has been materially increased through additional cross section areas of its scientifically designed side walls and ribs.

An improved carrier design results in additional strength. It is an extremely heavy, well-ribbed, single-piece casting which provides exceptionally solid support for the work spindles. This carrier also is provided with a long, adequately lubricated taper bearing, corresponding to the column taper bearing, as well as the upper ball race of the vertically adjustable ball thrust bearing.

Work spindles, six or eight in number, are heat treated, forged steel, each being provided with a drive gear of greater diameter than work capacity of the machine, which permits application of driving power appreciably in excess of cutting requirements. Spindles are equipped with individual spindle brake mechanism, which during indexing, brings them all to a standstill. Spindles are so designed that they will accommodate chucks or fixtures for manual operation, as well as power-operated chucks and fixtures. Either type may readily be applied to these new multaumatics.

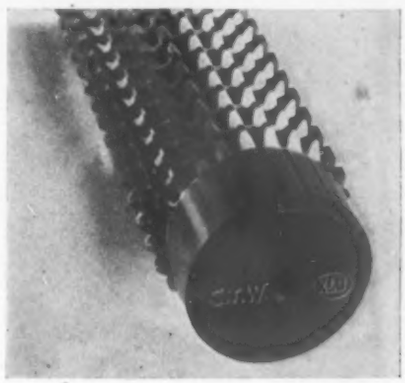
To further carry out the scheme of heavy construction and to amply fulfill modern machining requirements, sufficient distance from face of tools slides to center spindles has been allowed for unusually massive and rigid tool blocks. Positive lubrication for all moving parts is provided.



EIGHT-SPINDLE multaumatic chucking machine (extreme left) and center lathe designated type D and built by Bullard Co. The rigidity of the new column has been materially strengthened through the cross section areas of the side walls and ribs

A True Involute Tooth Form Features Broach

Ex-Cello-O Aircraft & Tool Corp., 1200 Oakman boulevard, Detroit, is manufacturing a new type of broach, the teeth of which have a true involute tooth form that is used in broaching internal gears. In the accompanying illustration is shown a closeup view of the finishing end of this type of tool, which reveals the involute tooth form on each spline. No additional operations are necessary, such as grinding or boring, as the gear is finished in one pass of the broach.



Finishing end of broach made by Ex-Cell-O Aircraft & Tool Corp.

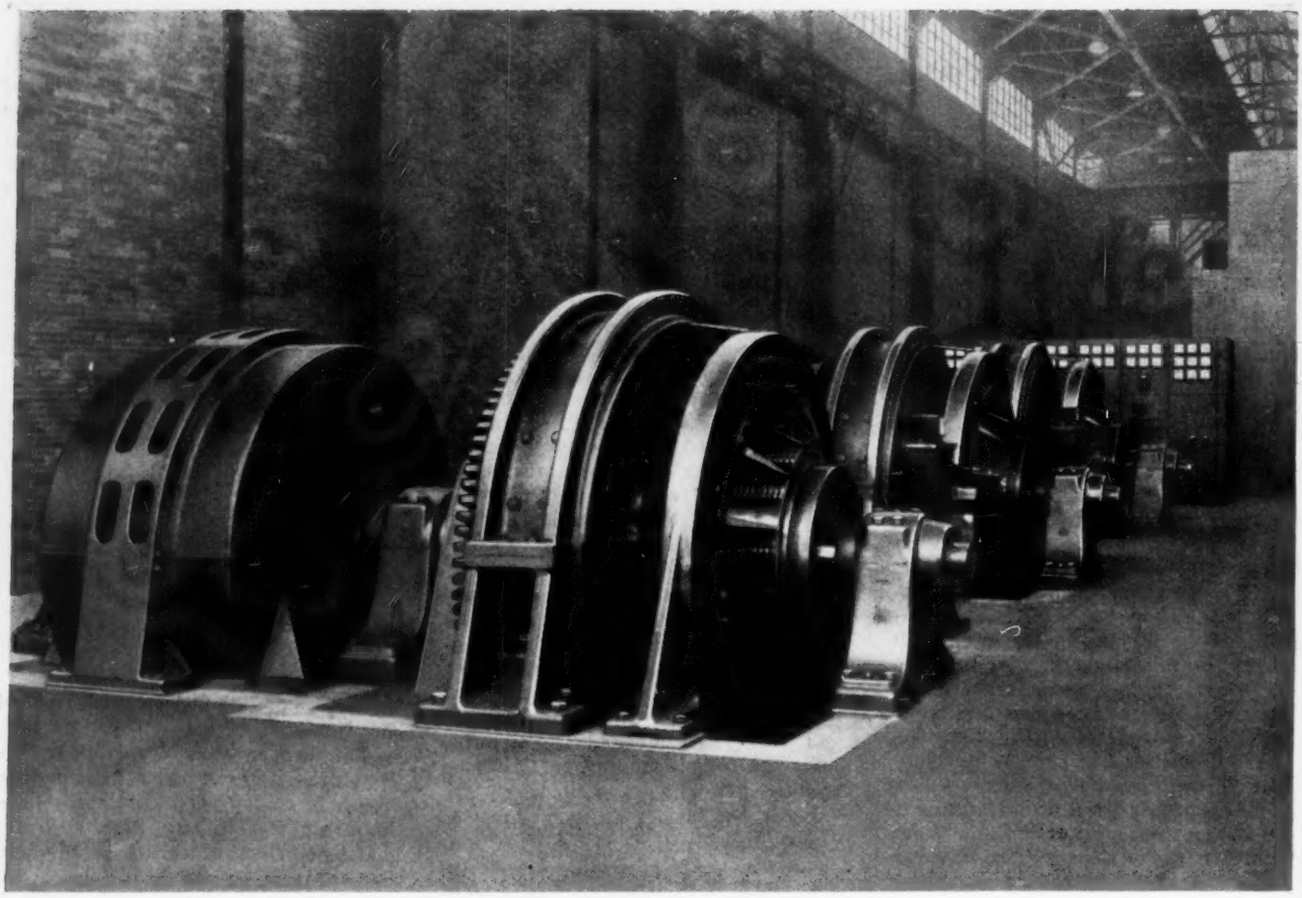
The broaches as featured in the illustration start from a drilled hole. Teeth in each row must be absolutely straight to insure high accuracy and finish. The section at the pull end of the broach is designed for sizing the hole and the remainder of the broach for broaching the form on each tooth. A range of diameters with a corresponding range in number of teeth can be furnished.

Limits on these broaches were held to 0.0003-inch on the splines, outside diameter to 0.0001-inch and the accumulated error in the spacing of the teeth not to exceed 0.0002-inch. The first section removes approximately 0.045-inch of stock. Pull end is designed for an automatic coupling which simplifies and speeds up the handling of the broach during the broaching operation.

Working Time of Machines Recorded by Unit

Warren Telechron Co., Ashland, Mass., has announced the development of an industrial timer for use in connection with piece rate produc-

Better Performance *with* Frog-Leg Windings



Section of a Frog-Leg winding showing one complete coil and parts of two other coils which occupy the same slots. *This winding is discussed in Leaflet 2135.*

TO furnish power for the mill supply circuit in the plant of a prominent steel manufacturer in the Youngstown, Ohio district, Allis-Chalmers has installed four 1500 kw., 250-volt direct current, 6600-volt, 3 phase, 60 cycle, 514 r.p.m. Synchronous Motor Generator Sets. As is our standard practice, the DC armatures are equipped with Allis-Chalmers Frog-Leg Windings, giving 100% cross connection without the use of external cross-connectors or involute windings. With this complete equalization of equi-potential points, it naturally follows that improved commutation is the direct result.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

ALLIS-CHALMERS

tion. The unit is turned on and off by a relay in the circuit to the motor of the machine whose output is being timed. The relay is so arranged that, if the motor is not running or is running under light load, the timer will not operate.

When the machine is operating, however, the increased load on the motor causes the relay to turn the timer on and the actual working time of the machine is recorded. The dial of the timer, shown in the accompanying illustration, differs from the usual clock dial in that the long hand indicates one-hundreths of an hour instead of minutes and the short hand revolves once in ten hours instead of twelve. When the timer is in operation the dial is illuminated.

Timer for machine operation developed by Warren Telechron Co.

Turret Lathe Is Designed To Increase Output

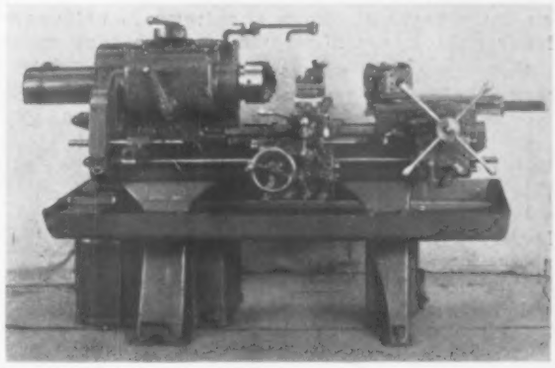
Warner & Swasey Co., 5701 Carnegie avenue, Cleveland, recently announced a new universal turret lathe with 1½-inch bar capacity and maximum swing of 15⅜ inches. Six spindle speeds, ranging from 67 to 740 revolutions per minute, are quickly obtained by conveniently located levers, both forward and reverse being provided at all speeds.

Head Runs in Oil Bath

Gears throughout machine are of chrome nickel steel, heat treated. The entire head runs in a bath of oil. Head clutches are designed for high torque at low speed and are easily and quickly adjusted. The spindle is mounted in double roller bearings, both front and rear.

Head-end gear train, which transmits feeding power from spindle to feed shaft, runs in a fully enclosed box and is splash lubricated. A nut is provided for adjusting the turret.

WARNER & SWASEY universal turret lathe incorporates a square turret cross slide which has an extremely long dovetail bearing surface so made that it is not exposed to grit and chips in any working position



It allows proper freedom of movement, at the same time it does not affect permanent accuracy of alignment of turret with center line of spindle. Automatic indexing, together with automatic binding mechanism, greatly increases convenience of operating the hexagon turret. Backward movement of the slide automatically releases the turret clamp and indexes turret, while forward movement of the slide automatically clamps the turret rigidly in position. Six power feeds to turret slide are provided.

The universal carriage carries a quick indexing square turret and is provided with six power cross and longitudinal feeds, both forward and reverse. Levers on both aprons are conveniently located and power feeds are easily engaged and disengaged by slight pressure. An automatic feed throw-out disengages longitudinal power feed at end of cuts. Cross slide carriage stop-roll has six stop screws which make possible turning of more than one diameter with one tool in the square turret on the carriage.

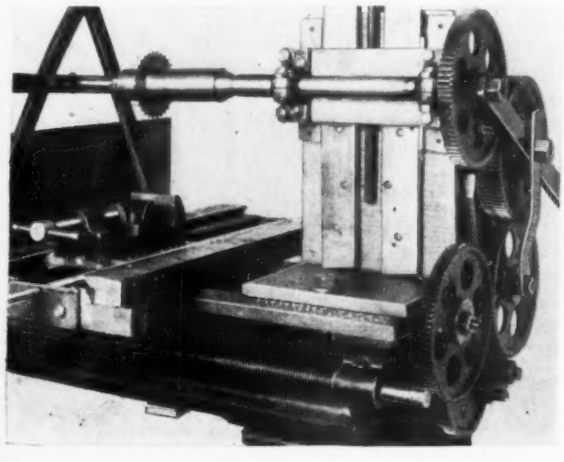
All moving surfaces are lubricated by a centralized system. For light duty a 3 horsepower motor is recommended and a 5 horsepower motor for heavy duty.

Improved Attachments for Milling on Lathes

G. E. Carter, P. O. Box 210, Wilmington, Del., now is manufacturing six different types of milling attachments for lathes. Recently he has designed an improved method of operating the spindle at the end where the "A" rest is located. In place of this rest he has added a slide to operate in conjunction with the other screw unit. This new feature which permits the spindle to be raised at both ends simultaneously, is optional and may be obtained at a slight increase in cost.

Variable Speeds Provided

The unit designated as No. 6 is shown in the accompanying illustration, No. 5 being the same except that it has a shorter table and arbor. Table has a run of about 17 inches and arbor design permits of lateral movement of cutter saw of about 4 inches, for various adjustments. Vertical adjustments of arbor is about 7 inches. Variable spindle speeds are permitted by use of different size gears



ONE type of milling machine attachment for lathe, designed by G. E. Carter. The table has a run of about 17 inches and arbor design permits lateral movement of cutter saw about 4 inches for various adjustments. Variable spindle speeds are permitted by use of different size gears on the motor shaft

on the motor shaft, shown at extreme lower right in the illustration.

Unit complete weighs about 75 pounds. It is extremely rigid. Removal from the lathe is accomplished merely by removing two cap screws. Unit No. 4 is virtually a combination of the first three, being adjustable in every direction. It swivels horizontally and vertically, is adjustable for various heights, and has a sturdy vice. The jack vice is included with this unit.

◆

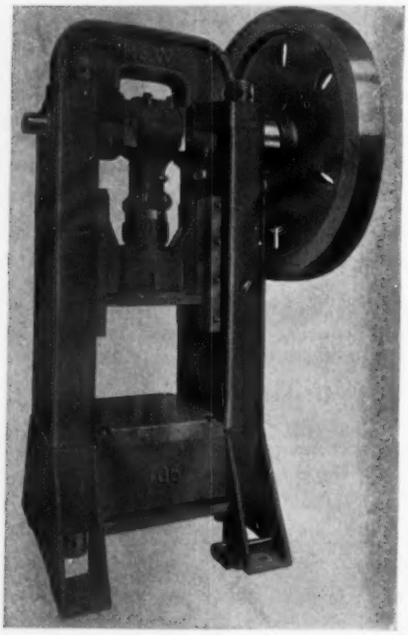
Welded Construction Used In Steel Presses

Henry & Wright Mfg. Co., Hartford, Conn., has made extensive additions in past months to its line of steel presses of welded construction in the inclinable and single crank straight-sided types. These additions include a series of double crank straight-sided presses, horning types, straight-sided knuckle joint, and double crank overhanging gap frame presses, as well as special presses of various types.

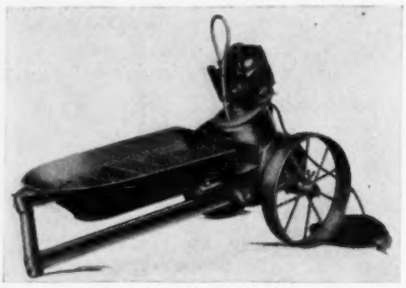
Practically all of the single crank, double crank and knuckle joint units are made in the shrunk-in tie rod construction as shown in the accompanying illustration, although a number of these presses have been built with solid frames where special tooling and other conditions warrant it. In either type of construction the frame members as well as the slide and large gears are made from welded steel units annealed and normalized before any machining is performed in order to release any stresses set up in either the rolling or welding processes.

One of the newly designed units, a 200-ton capacity knuckle joint press, is one of a battery made in the solid frame type in order to keep the right to left overall dimension to a minimum for the required die space. This machine has a ½-inch stroke and operates at 65 strokes per minute. Continuous forced feed lubrication is applied to the hardened and ground alloy steel pins and link linings from a pump and oil reservoir located at the rear of the press.

Flexibility of welded steel construction in providing a press to exactly fit special tool requirements is exemplified by the fixed inclined open back press. This machine is inclined 15 degrees from horizontal and has an especially large bed area and opening for the capacity of the press. The company also is furnishing welded steel frames for all types of presses to replace broken cast iron frames.



Henry & Wright press showing shrunk-in tie rod construction



Foundry sand preparing machine built by Beardsley & Piper

◆

Designs Foundry Unit for Preparing Sand

Beardsley & Piper, 2541 North Keeler avenue, Chicago, recently announced a new portable sand screening, blending, aerating and throwing unit designed to prepare heap, facing and core sand, and for odd sand conditioning jobs about the foundry. The operation of this conditioning device is simple; the sand is shoveled on the ridged screen, the reciprocating motion of which thoroughly breaks, aerates and screens the sand and drops it into the hopper below. From here it is conveyed by gravity and the reciprocating motion to the rotor housing where a series of long-wearing blades or paddles revolving at high speed thoroughly cut, mix and blend the sand and expel it into a pile at the front of the machine. Refuse and sand contaminations are eliminated through the chute at the side of the hopper.

Ruggedness and strength, combined with lightness and portability, make this highly efficient unit low in first cost and maintenance-free, the manufacturer claims.

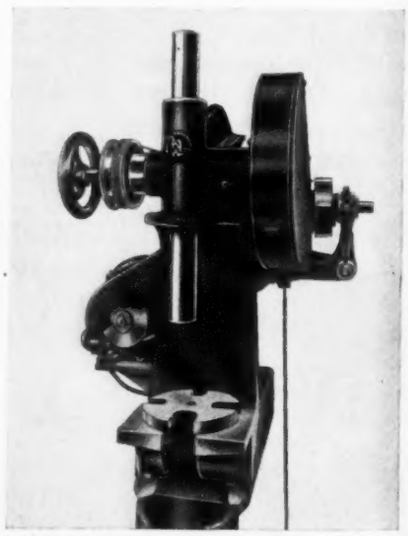
◆

Three Tons Is Capacity of New Arbor Press

Greenerd Arbor Press Co., 41 Crown street, Nashau, N. H., has developed a new motor-driven arbor press of three tons capacity, designated No. 50. This unit is especially developed for rapid continuous work such as assembling, broaching, stamping and die work as well as a general utility press.

A ½ horsepower motor, through reductions, drives the ram which is controlled by a friction clutch, and has optional hand or foot controls. A slight pressure on the foot treadle delivers three tons pressure at the bottom of the ram which travels 11½ inches in 10 seconds, the stroke being adjustable from ½ to 11½ inches. Diameters up to 12 inches are accommodated and the height over the plate is 11¼ inches. The No. 50 press can be mounted on a bench or equipped with a stand.

The unit is equipped with anti-friction bearings throughout, and incorporates semisteel castings and alloy steel heat-treated pinions. It represents the company's 49 years of experience in building arbor presses.



Greenerd arbor press developed for continuous operation

How steel manufacturers can make more money in 1932

There are encouraging signs that conditions in the steel industry will be better in 1932 than they were in 1931.

Spring demands will probably reach a higher point this year, due to anticipated revivals in the automotive and building industries.

No matter how the upward trend develops, however, one thing is sure—production costs will continue to exert a vital influence on profits.

The obvious thing to do, therefore, is to stress production economies more and more. In this connection, too much emphasis cannot be placed on the urgent need for modernized equipment.

Obsolete machinery will not serve the pressing needs of the present, nor the probable production requirements of the future, and should be replaced or remodeled as quickly as possible.

One of the most important angles of the modernization movement that is rapidly spreading throughout the steel industry, is the wholesale sweep to Timken Heavy Duty Mill Type Bearings for mill roll necks.

Timken Bearings have so radically revolutionized rolling costs in bar mills, sheet mills, plate mills, merchant mills and tube mills, that the mill operator who does not use them will find himself operating under a tremendous handicap.

With Timkens on roll necks, power savings run as high as 50%. Lubricant consumption is but a fraction of plain bearing requirements. Bearing life expectations are from 10 to 20 times longer.

Timken-equipped mills will not only protect your profits now. They will give you a decided advantage when production has to be forced to meet peak demands later on.

Consult your mill builder regarding the application of Timken Bearings to your mills, or write us direct. The Timken Roller Bearing Co., Canton, Ohio.

TIMKEN *Tapered Roller* **BEARINGS**

Italy Finds Support in Her Domestic Market Needs

BY DR. ING. GUIDO VANZETTI
Special Correspondent

AS A RESULT of decreased orders received from the mechanical industry the public works, railroads, shipyards and building trades, there was a marked reduction in the output of steel in Italy in 1931 as compared with 1930, and still more so with regard to the record year of 1929. It is to be noted, however, that compared with the decrease in the world output, and probably due to the fact that most of the production is absorbed in the domestic market, Italian production diminished in a comparatively smaller proportion to what was the case in most other countries.

Taking the first six months of the year, the world production of pig iron in 1930 and 1931 was 90 per cent and 62 per cent respectively in comparison with that of the first six months of 1929; for steel the output was 86 per cent and 61 per cent. In Italy, the figures for pig iron were 77 per cent for the first six months of 1930 and 75 per cent for 1931, and for steel the figures were 81 per cent and 68 per cent respectively. Estimating the capacity of production in Italy at 800,000 metric tons of pig iron and 3,000,000 tons of steel, it is expected that the output of pig iron in 1931 will be about 68 per cent of capacity, while for steel it should not exceed 49 per cent.

Price Structure Firm

The restriction of output goes far to explain the fact that prices dropped but slightly throughout the year. The necessity to meet overhead expenses in works operating only part time, and also maintenance expenses in works which were completely closed down, counteracted the greater part of the economies that could be effected in actual production costs.

The output of rolled steel was reduced in proportion to the restriction of raw steel production, and the monthly average for the first eight months of 1931 was 113,000 metric tons, against 140,000 tons for the corresponding period of 1930 and 167,000 tons in the same period of 1929. The prices of rolled products as fixed by the Unione Siderurgica Italiana dropped by about 10 per cent.

The term of the Italian metallurgical syndicate expired at the end of 1931, and the possibility of its renewal is uncertain, as this syndicate has not given satisfactory results to all concerned. It must be noted that this organization includes only the rolling mills, and that seven firms remained outside the syndicate; these outside firms were therefore enabled to compete against the syndicated firms at lower prices.

Other smaller syndicates control certain special products such as tubes, sheets, tin plate and wire rod, but are not entirely satisfactory; for instance, the price of wire rod was fixed by the Italian syndicate at 835 lira per metric ton, delivered in Milano, while the basis price of bright wire, which product is not syndicated, was only about 650 lira, or 185 lira less than the raw material from which it is made. It is also felt that a more comprehensive organization is needed which would have power to control production, limit the exaggerated development of existing works and prevent the creation of new plant unless it is justified by special technical and economic conditions.

This review of business conditions in Italy in 1931 supplements the presentation of facts relating to other European countries in the Jan. 4 issue of STEEL, pages 219 to 236.

The process of rationalization already started by the powerful concern of Ilva in the course of 1930 continued in 1931, during which year the concern absorbed five companies, including the blast furnaces of Servola and of the Elba company. The Ilva now has a capital of 536,000,000 lira and produces practically all the pig iron made in Italy with the exception of the Hauts Fourneaux de Cogne and a few small furnaces producing synthetic cast iron. This large amalgamation should result in considerable economies in overhead and administration expenses, and also in fiscal charges.

About three months after the abovementioned amalgamation, a decrease in the production of ferroalloys was noticed, amounting to about 25 per cent of the 1930 output and 30 per cent of the 1929 output. It is expected that for 1931 the annual production of ferroalloys will be about 35,000 metric tons.

Scrap Presents Problem

The decrease in steel production resulted in a considerable increase in stocks of scrap and a serious weakening of scrap market prices, which was accelerated by low offers on the part of France, Germany and the United States. The supply of scrap is an important question for Italian steelworks. An agreement was arrived at with France at the end of May, 1926, according to which Italy could obtain 200,000 metric tons of scrap from France annually. In addition to this tonnage the Italian steelmakers could also import certain material to be used as scrap, which was not included in the French nomenclature under that term.

A new agreement was made in Paris at the end of the year under which this unspecified material was included as scrap in the nomenclature, but the annual tonnage to be supplied was increased to 350,000 metric tons, of which 250,000 tons are unconditional and the balance supplied against an undertaking on the part of Italy to import a certain tonnage of French pig iron, semifinished steel and rolled steel in the proportion of one ton of scrap against 1.2 tons of iron and steel products.

During 1931 imports of iron and and steel into Italy decreased in tonnage by about 50 per cent in relation to 1930 imports. On the other hand, temporary admission of products to be worked up into rolled steel and sheets for naval construction, and into other finished products for re-export, showed an increase.

Owing to the general economic conditions of the world, the outlook for 1932 is uncertain, but the Italian iron and steel market being fairly well protected, a further serious decline in activities is not anticipated.

Italian Production

(Metric tons)

Mo. ave.	Pig iron and ferro-alloys	Raw steel	Rolled steel
1928	46,136	163,580	151,855
1929	60,840	178,560	162,645
1930	48,170	147,840	136,450
1931			
Jan.	42,694	120,704	94,144
Feb.	38,066	109,310	103,310
March	45,936	120,730	121,720
April	46,837	125,380	116,408
May	50,969	142,442	128,044
June	48,456	131,484	112,740
July	47,456	126,504	128,154
Aug.	44,214	100,702	99,681
Sept.	45,890	122,440	.....
Oct.	43,900*	130,286	.....
Mo. ave.	45,442	122,300	113,025

*Estimated.

Small Orders Give Moderate Lift

Steelworks Operations Recover Holiday Losses and Advance to 25 Per Cent—Automotive Consumption Slightly Heavier—Railroads Waiting

A STRAIN of mild improvement is running throughout the iron and steel markets. In no district and in no product is it pronounced, but the aggregate of numerous small, scattered inquiries and orders is providing a moderate lift, resulting in steelworks operations regaining all the ground surrendered during the holidays and advancing one point to 25 per cent.

In the Middle West there is a good sprinkling of automobile business, more encouraging than in 60 days. Automobile builders are releasing material only a few days ahead of actual consumption, but unquestionably production will be heavier in January than in December. Chevrolet's schedules are well ahead of December. Ford continues on the verge of placing steel for his 8-cylinder model, planning an initial output of 2000.

In numerous lines reports are more buoyant. Sheet specifications at Youngstown and Pittsburgh are better; bar demand at Chicago is the best in two months; shipments of wire products for spring stocking are larger. Seventy thousand boxes of tin plate for shipment to an American packer in Argentina have been distributed to American mills. In building construction emphasis is on the number of comparatively small orders, well distributed, rather than on the aggregate, structural shape awards for last week amounting only to 13,000 tons.

Inquiry for railroad equipment and track material has practically vanished, except the Erie's for 40,00 tons of rails, on which bids are being taken. Many western roads have reopened their car repair shops, taking more steel. Final figures place 1931 freight car awards at 10,694, of which 6000 were placed with the railroads' own shops, compared with 45,146 in 1930 and 106,105 in 1929. It is not believed the railroads will cover even their attenuated track material requirements before 60 days, or until freight increases and wage reductions have improved their position.

Municipalities are showing more interest in cast iron pipe in framing 1932 budgets. Buffalo has decided to continue the laying of cast iron water mains, the United States Pipe & Foundry Co. booking 8000 tons for that city. National Tube Co. has taken 3000 tons of 8-inch steel pipe for the Gulf Pipe Line Co.

The confused freight rate situation growing out of imposition of surcharges, effective Jan. 4, and the new class rates applied Dec. 3, is being clarified. In most instances consumers are bearing the burden. Iron and steel manufacturers must shoulder the increase on their raw materials.

In steelworks operation last week Birmingham led at 60 per cent. Cleveland and Youngstown were at 32 per cent, Pittsburgh 25, Chicago 20, Buffalo and eastern Pennsylvania 16. For this week a two point rise is scheduled in eastern Pennsylvania, an increase of one or two points for Youngstown, with other districts likely to show fractional gains. Ford has resumed with two open hearths; the Chateaugay blast furnace in New York has been blown in, and the Carnegie Steel Co. is to blow in a stack at its Ohio works.

Prices continue unsettled, but are believed to be nearer stabilization. Sheets have been reduced further, though the occasion for the pronounced weakness noted recently—bidding for automotive tonnage and the desire of some mills to improve their financial position at the close of the year—has passed. Southern pig iron has dropped $1 a ton for northern delivery. STEEL's composite of iron and steel prices is unchanged at $29.96; the finished steel composite is down 10 cents to $47.02; the steelworks scrap composite remains $8.12.

Composite Market Averages

	Jan. 9	Jan. 2	One Month Ago (Dec., 1931)	Three Months Ago (Oct., 1931)	One Year Ago (Jan., 1931)	Ten Years Ago (Jan., 1922)
Iron and Steel Composite	$29.96	$29.96	$30.32	$30.74	$31.71	$33.35
Finished Steel Composite	47.02	47.12	47.74	48.22	49.30	50.54
Steelworks Scrap Composite	8.12	8.12	8.16	8.50	10.49	11.31

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Jan. 9, 1932	Dec., 1931	Oct., 1931	Jan., 1931
PIG IRON				
Bessemer, del. Pittsburgh	$17.26	17.51	18.16	18.76
Basic, valley	15.00	15.00	16.50	17.00
Basic, eastern del. eastern Pa.	16.00	16.00	16.25	17.25
No. 2 foundry, del. Pittsburgh	17.26	17.51	18.16	18.26
No. 2 foundry, Chicago	16.50	16.60	17.20	17.50
*Southern No. 2, Birmingham	12.00	12.00	12.00	14.00
**No. 2X, Virginia furnace	18.00	18.00	18.00	18.25
**No. 2X, Eastern del. Phila.	15.76	16.01	17.26	18.26
Malleable, valley	16.00	16.10	16.90	17.50
Malleable, Chicago	16.50	16.60	17.10	17.50
Lake Superior, charcoal, del. Chi.	23.04	20.79	25.04	27.04
Gray forge, del. Pittsburgh	16.63	16.88	17.53	17.63
Ferromanganese, del. Pittsburgh	79.85½	84.79	89.79	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10 to $11, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsville furnace, ovens	2.25	2.30	2.40	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.30
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	26.00	28.00	29.00	30.00
Sheet bars, open-hearth, Pitts.	28.00	28.00	29.00	30.00
Billets, open-hearth, Pittsburgh	28.00	29.00	29.00	30.00
Wire rods, Pittsburgh	37.00	35.00	35.00	35.00

	Jan. 9, 1932	Dec., 1931	Oct., 1931	Jan., 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.50	1.60	1.60	1.65
Steel bars, Chicago	1.70	1.60	1.70	1.70
Steel bars, Philadelphia	1.81	1.89	1.89	1.94
Iron bars, Chicago	1.60	1.60	1.70	1.70
Shapes, Pittsburgh	1.50	1.50	1.60	1.60
Shapes, Philadelphia	1.65	1.69½	1.76	1.81
Shapes, Chicago	1.70	1.60	1.70	1.70
Tank plates, Pittsburgh	1.50	1.50	1.60	1.65
Tank plates, Philadelphia	1.69½	1.73½	1.80½	1.81½
Tank plates, Chicago	1.70	1.60	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.75	1.85	1.85	2.05
†Sheets, No. 24, hot, ann., Pitts.	2.25	2.40	2.40	2.35
Sheets, No. 24, galvan., Pitts.	2.80	2.90	2.90	2.90
Sheets, No. 10 blue anneal., Chi.	2.00	2.00	2.00	2.50
†Sheets, No. 24, hot, ann., Chi.	2.45	2.55	2.55	2.20
Sheets, No. 24 galvan., Chi.	2.95	3.05	3.05	3.05
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.90	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.25	10.25	10.45	13.00
Heavy melting steel, eastern Pa.	7.50	7.65	8.20	10.50
Heavy melting steel, Chicago	7.50	7.50	7.75	10.00
No. 1 wrought, eastern Pa.	9.50	9.50	9.50	13.25
No. 1 wrought, Chicago	7.25	7.40	8.00	9.50
Rails for rolling, Chicago	10.50	10.00	10.50	13.00

Sheets

Moderate Improvement Noted—Prices Are Still Easy, but Steadier Than Late in December

SHEET PRICES, PAGE 41

Pittsburgh — Sheet specifications have improved moderately. Several automotive companies have increased their requirements although total business from this field is slow and restricted by quietness in demand for the Ford Motor Co. Most orders still are small, and improvement in general buying is rather spotty. Prices continue to show occasional weakness but are fairly steady. The usual minimum on hot-rolled annealed sheets is 2.25c with some sales ranging up to 2.40c. Weakness in galvanized prices persists in the East, the general market being 2.80c to 2.90c. Blue annealed sheets continue 1.75c to 1.85c, with autobody 2.90c to 3.00c. Long ternes are easier at 2.90c to 3.00c. Mill operations average about 25 to 30 per cent.

New York—Sheet prices continue soft, with No. 24 hot-rolled annealed possibly the weakest, at 2.25c to 2.40c, Pittsburgh. Galvanized sheets are 2.80c to 2.90c, and hot-rolled No. 10, 1.60c to 1.70c. Sellers look for little improvement before the end of this month.

One midwestern mill reduced its prices $2 a ton on some grades, effective Jan. 8, quoting galvanized 2.80c, Pittsburgh; blue annealed, 1.75c; hot-rolled annealed 2.30c; and hot-rolled No. 10, 1.75c.

Philadelphia — Galvanized sheets are easier, with 3.11c, Philadelphia, the usual price on new orders. No. 10 hot-rolled sheets are 1.91c to 2.01c, Philadelphia; No. 10 blue annealed, 2.06c to 2.16c; No. 24 hot-rolled, 2.56c to 2.71c. Business is light.

Buffalo—Price concessions for large orders are noted in this market. A central New York consumer bought 1500 to 2000 tons of sheets under the market.

Youngstown, O.—Sheet mills are uncovering some new business in various lines of manufacture. Buyers who allowed stocks to run low are placing a larger volume of orders. The automotive industry, however, is slow to release specifications. New low quotations are being put out to attract large tonnage. The latest price range on common black appears to be 2.15c to 2.40c, Pittsburgh, and on galvanized, 2.80c to 2.90c, with autobody, 2.90c to 3.00c, although cold-rolled has been offered even lower. The sheet mill operating rate appears to be about 25 to 30 per cent.

Cleveland — Inquiry from large consumers still is slack, and orders promised before 1932 have been slow coming in. Some fabricators on automobile work reflect the cautious attitude of the automotive companies. Prices continue easy.

In the recent report of Ohio's purchase of 1100 tons of sheets for license plates it was stated in error that Continental Steel Corp., Kokomo, Ind., bid for the business. The corporation did not submit a bid.

Cincinnati—Sheetmakers are confident of an increase in demand soon. Prices are unsettled by reported shading in other districts.

Chicago—Sheet mill operations for the district are about 20 per cent. All orders are small. Jobbers are expected to stock soon for spring roofing requirements. Galvanized sheets are weaker in this district, the range now being 2.90c to 3.00c, instead of the recent flat 3.00c mill price.

St. Louis—Price uncertainty has restricted sheet orders. Little business is reported for prompt delivery.

Birmingham, Ala.—The Gulf States Steel Co.'s sheet mill, down nearly three weeks, has resumed on part-time schedule. The Tennessee Coal, Iron & Railroad Co.'s sheet department lost little time during the holidays, though operations have been under 50 per cent.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Prices in cents per pound unless otherwise stated

Steel Sheets

HOT ROLLED No. 10

Pittsburgh, base	1.65c to 1.70c
Gary, Ind. Harbor, base	1.70c to 1.80c
Chicago, del.	1.75c to 1.85c
Philadelphia, del.	1.91c to 2.01c
Birmingham, base	1.80c to 1.85c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.75c to 1.85c
Chicago, district mills	1.95c
Chicago, delivered	2.00c
Philadelphia, del.	2.06c to 2.16c
St. Louis, delivered	2.20½c
Birmingham	2.00c
San Francisco c.i.f.	2.35c

***HOT ROLLED ANNEALED NO. 24**

Pittsburgh, base	2.15c to 2.40c
Gary, Ind. Harbor, base	2.40c to 2.50c
Chicago, del.	2.45c to 2.55c
Philadelphia, del.	2.56c to 2.71c
Birmingham, base	2.45c to 2.55c
St. Louis, delivered	2.67½c
San Francisco, c.i.f.	2.90c

GALVANIZED NO. 24

Pittsburgh, base	2.80c to 2.90c
Gary, Ind. Harbor, base	2.90c to 3.00c
Chicago, del.	2.95c to 3.05c
Philadelphia, base	3.11c
Birmingham, base	3.05c
St. Louis, del.	3.27½c
San Francisco, c.i.f.	3.40c

***AUTOMOBILE NO. 20**

Pittsburgh, base	2.90c to 3.00c

FURNITURE

Pitts., No. 10 heavy	2.65c
Pitts., No. 20 light	3.25c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.55c to 2.65c
Gary base	2.65c to 2.75c
St. Louis, del.	3.00½c

***HEAVY COLD ROLLED NO. 10**

Pittsburgh base	2.25c to 2.35c
Gary, Ind. Harbor, base	2.35c to 2.45c
Chicago, del.	2.40c to 2.50c
Philadelphia, del.	2.56c to 2.66c
St. Louis, del.	2.62½c

***COLD ROLLED NO. 20**

Pittsburgh, base	2.70c to 2.95c
Gary, Ind. Harbor, base	2.95c to 3.05c
Chicago, del.	3.00c to 3.10c
Philadelphia, del.	3.16c to 3.26c
St. Louis, del	3.22½c

*Lower prices have been applied on large tonnages of special sizes.

Tin and Terne Plate

Prices per 100-pound box Pittsburgh

Tin plate, coke base	$4.75

Gary, Ind., base 10 cents higher
Long ternes, 24, unassorted, 2.90c to 3.00c

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind. Chicago, $1 over Pitts-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.50c to 1.60c
Philadelphia, base	1.69½c to 1.79½c
New York, delivered	1.80c to 1.90c
Boston, delivered	1.92c to 2.02c
Chicago, base	1.70c
Cleveland, del.	1.70½c to 1.80½c
Lackawanna, N. Y., base	1.60c to 1.70c
Birmingham, base	1.75c
Coatesville, Pa., base	1.60c to 1.70c
Pacific Coast, c.i.f.	1.80c to 1.85c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.50c to 1.60c
Philadelphia, del.	1.65c to 1.75c
New York, del.	1.77c to 1.87c
Boston, del.	1.90½c to 2.00½c
Chicago, base	1.70c
Cleveland, del.	1.70½c to 1.80½c
Lackawanna, N. Y., base	1.60c to 1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.05c
Do, wide flange	2.15c

Bars

SOFT STEEL

Pittsburgh, base	1.50c to 1.60c
Chicago, base	1.70c
Birmingham, base	1.70c to 1.75c
Lackawanna, N. Y., base	1.60c to 1.70c
Pacific coast, c.i.f.	2.05c
Cleveland, base, local del.	1.55c to 1.65c
Cleveland base, out. del.	1.60c to 1.65c
Philadelphia, del.	1.81c to 1.91c
New York, del.	1.85c to 1.95c
Boston, del.	1.97c to 2.02c
Pittsburgh, cold finish	1.65c to 1.75c
Pittsburgh, forg. qual.	1.75c to 1.85c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
Eastern mills	1.30c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.60c to 1.65c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.84c to 1.94c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Stock lengths, mill	1.60c
Chi., billet	1.75c to 2.00c
Chi., rail steel	1.55c to 1.80c
Chi., rail steel, bridges and culvert	1.40c to 1.50c
Philadelphia, cut lengths	2.06c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base Pittsburgh, Chicago, Buffalo and Cleveland	2.00c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.35c to 2.80c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	23c	24.5c	27c	32c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to 6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo.	1.25-1.75 Ni. 1.05
2000	0.25	5100 .80 - 1.10	
2100	0.55	Cr.	0.45
2300	1.50	51.00 Cr.	
2500	2.25	spring	0.20
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.80	Cr., Ni., Van.	1.50
3400	3.20	Carbon Van.	0.95
4100 .15 to .25		9250 (flats)	0.25
Mo.	0.50	9250 (rds.,sq.)	0.50

Strip, Hoops Bands

Hot strip, to 6-in., Pitts.	1.50c to 1.60c
Do, 6 1/16 to 24-in., Pitts.	1.40c to 1.50c
Hot strip to 6 in. Chi.	1.65c to 1.70c
Do, 6 1/16 to 24 in.	1.55c to 1.60c
Cooperage hoop, Pitts.	1.70c to 1.80c
Do., Chicago	1.85c to 1.95c
Cold-roll. strip, Pitts., Cleve.	2.00c to 2.10c
Worcester, 3 tons, over	2.20c

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$22.00 to $26.00
50 to 75	20.00 to 24.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.60c
Spikes, boat, barge, Pitts.	2.90c
Track bolts, Pitts., steam	3.50c
Do, standard, jobbers	75 off list
Track bolts, Chicago	3.50c
Tie plate, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread.....73, 10 and 10 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list .....73, 10 and 10 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts .....73, 10 and 10 off
Tire bolts .....60, 10 and 10 off
Stove bolts, 80-25-10 off in pkgs.; 80 25-10-2½ off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished .....73, 10 and 10 off

HEXAGON CAP SCREWS

Milled .....80-10-10-5 off
Upset 1 in. diam. and smaller....85-10 off

SQUARE HEAD SET SCREWS

Milled .....80-5 off
Upset 1 in. and smaller .....80-10-5 off
Upset, larger than 1 in.....80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh.....2.50c
Do. less carloads, 5 kegs or over..2.75c; less than 5 kegs, 2.90c.
Chain, BB, BBB, 9/16-1½ in....33 1/3 off
Sheet piling, Pitts. 1.90c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chicago, Cleve.	70, 10 and 5 off

Bars

Sales and Specifications at Chicago Best in 60 Days—Up to $2 Ton Added to Production Cost

BAR PRICES, PAGE 41

Chicago—Due in large part to the triple freight rate advances affecting the local market, including higher Chicago switching district rates, western classification, and emergency surcharges, steel producers have withdrawn the 1.60c price on bars, plates and shapes, and are quoting a flat 1.70c. The increased freight rates result in $2 a ton additional in the cost of finished steel, according to producers. More hopes are pinned on favorable conditions for the railroads, but it is believed that if a voluntary wage cut is determined Jan. 14, probably 60 to 90 days will elapse before the carriers' financial affairs will be so adjusted as to enable steel purchases. Bar specifications and sales in the week just closed were the best in about 60 days, partly as a result of the carryover of year-end shipping requisitions effective after the holidays. A few contract sales for first quarter have been made at 1.70c. Automotive business is awaiting the Ford program.

New York—Commercial steel bars are 1.50c to 1.60c, Pittsburgh. There is little to test the market, but on the run of present business 1.50c appears to be minimum. Common iron bars are easy at 1.60c, Pittsburgh.

Philadelphia—While commercial steel bars in carlots are more generally available at 1.50c, Pittsburgh, this price appears to be the minimum on such business as now offered, with 1.60c still applying in instances.

Pittsburgh—Steel bar orders are quiet, showing little change from the rate of preceding weeks. Automotive demand is slow, and users show little tendency to replenish stocks depleted over the year-end. The market continues 1.50c to 1.60c with the higher figure usually quoted to average buyers.

Youngstown, O.—Numerous small specifications for common steel bars keep mills operating at about 20 to 25 per cent. Immediate needs seem to be the impelling reason for such small-lot buying as is current. Common steel bars bring 1.50c to 1.60c, Pittsburgh.

Cleveland—Two merchant steel bar mills apparently are meeting each other's competition on the basis of 1.55c, Cleveland, and 1.50c, Pittsburgh. However, other producers still are adhering to the 1.65c, Cleveland base, and are getting this on some business. A slight improvement in small automotive specifications is noted.

Cold-Finished Shipments Face Poor Prospects

Cold Finished Prices, Page 41

Cleveland—Many plants consuming cold-finished steel bars have not reopened except for a few days operation a week since the year-end holidays of 1931. Thereby shipments have still been held to a restricted rate. New ordering lends little encouragement.

Pittsburgh—Little improvement in shipments of cold-finished steel bars to the automotive industry is in prospect this month in view of the postponement in activity by the Ford Motor Co. and curtailed activity at other auto plants. Orders from farm implement builders are light and unimproved while requirements of miscellaneous consumers also lag. The market continues 2.00c, Pittsburgh.

Tin Plate Anticipated Tonnage Nearly Shipped

Tin Plate Prices, Page 41

Pittsburgh — Tin plate specifications are fair. Production and shipment of anticipated tonnage are largely completed and little improvement in output is in prospect over the remainder of this month. Mill operations average around 40 to 45 per cent. Tin plate continues $4.75, Pittsburgh, per base box.

New York — Seventy thousand boxes of tin plate for shipment to an American packer's plant in Argentina has been distributed to American producers.

Plates

Reopening of Western Railroad Shops Expected to Increase Demand—Tank Orders Larger

PLATE PRICES, PAGE 41

Chicago—Oil tank prospects are meager in the plate market. About 3000 to 3500 tons have been placed with local tank fabricators for refinery work, largely on the Pacific coast. Mills here now are naming 1.70c base on plates, instead of 1.60c to 1.70c, Chicago. Reopening of eight western railroad shops is expected to stimulate plate demand slightly.

New York—Plate specifications are likely to show little improvement before the end of the month. Meanwhile, prices are 1.60c to 1.70c, Coatesville, Pa.

Approximately 400 tons have been placed for a 42-inch steel pipe for Newark, N. J., with the East Jersey Pipe Co. The American Locomotive Co. is closing on 500 tons of plates for Lackawanna locomotives.

Philadelphia—Plate sales include two fair size tonnages. An inquiry has been issued for 600 tons for reconditioning four vessels for the American Scantic line. Some plates also are required for repairing six government dredges, work on five to be done by the Sun Shipbuilding Co., and on the other at the Philadelphia navy yard. Plate prices are holding at 1.69½c to 1.79½c, with the lower figure the more representative.

Pittsburgh—Plate demand from leading consumers is slow. Activity in river equipment is confined mainly to government work although some improvement in orders from private interests is in prospect. Specifications hold at about the December rate.

Cleveland—Steel plates now are 1.70½c to 1.80½c, delivered Cleveland, since the new freight surcharge of 10 per cent of the former freight rate, but not to exceed 2.00c additional per 100 pounds, has gone in effect.

Contracts Placed

300 tons, tunnel lining, Hoover Dam project, Boulder City, Nev., to Consolidated Steel Corp., Los Angeles.

100 tons, steel tank, 136-foot tower, Sing Sing prison, New York, to Witt-Humphrey Steel Co., New York; Metro Corp., general contractor.

100 tons, tanks and stills for Fields Chemical Corp., Long Beach, Calif., to McClintic-Marshall Corp., Bethlehem, Pa.

Contracts Pending

1500 tons, two pipe line dredges for United States engineers, St. Louis dis-

trict; bids to be opened Feb. 5 in Washington.

1000 tons, plates and shapes, four-lift telescope type gas holder and 200,000-gallon tank on 100-foot tower, naval air station, Sunnyvale, Calif.; bids Jan. 27, chief, bureau of yards and docks, Washington.

480 tons, 20 pontoons for United States engineers, Kansas City, Mo., district; Chicago Bridge & Iron Works, Chicago, low bidder.

150 tons, tank and trestle, Benton Field, Calif.; bids opened.

100 tons, plates and shapes, water tank, veterans' hospital, Palo Alto, Calif.; bids Jan. 11.

Wire Shipments Gain as Contracts Are Completed

Wire Prices, Page 41

Chicago—Wire products specifications have made a relatively sharp gain in the last few days, partly due to completing contracts for merchant products. A few contracts for nails and plain wire have been closed for first quarter at $2 and 2.25c, Chicago or western mills.

Worcester, Mass.—While wire production shows no further signs of slackening, it exhibits no indication of an upward swing. Shipments are holding to previous levels. Prices are firm at 2.30c, base Worcester, for plain bright wire to dealers.

New York—Sellers generally are quoting $1.95, Pittsburgh, on nails, although a real test may not develop for 60 days as most large consumers have sufficient lower priced material to cover their needs. Wire is quiet and nominally unchanged at 2.20c, Pittsburgh.

Graybar Electric Co., Inc. has been awarded 650,000 feet parallel drop wire for the signal corps, New York, on a bid of $4.73 per 1000 feet with an alternate of $4.68.

Washington—Bids on 70¾ tons of nails for the Panama canal place the Bethlehem Steel Export Corp. and Gulf States Steel Co., low, the former on most of the business. Bethlehem is low on 115,000 pounds of bright wire common nails, $2621.25, and 15,000 pounds bright wire finishing nails, $396.25. Gulf States Steel Co. is low on 7000 pounds galvanized common nails, $242.40, and 4500 pounds galvanized finishing nails, $189.50.

Pittsburgh—Shipments of wire products have been fairly active recently as a result of advances in prices and freight rates but activity is expected to be reduced later in the month. Shipments against old contracts are to be completed Jan. 15. Although lacking a test of specifications against new contracts prices show a steady tone at $1.95 for carload lots of wire nails, 2.20c for plain wire and $37 for wire rods. A variation in method of application of the emergency freight charge is resulting in some confusion, particularly in the sale of wire fencing.

Cleveland—Wire mills are meeting resistance from jobbers on the new prices, centered on nail carloads at $1.95 a keg. Current specifications are light. Plain wire is 2.20c, mill, and spring wire is 3.20c.

Railroads

December Car Awards Smallest —Seaboard Air Line Buys 2800 Tons Tie Plates

TRACK MATERIAL PRICES, PAGE 41

New York—The car market starts off 1932 with little activity in sight. Car builders do believe, however, that the moment there is an upswing in general business it will be reflected in railroad buying. This buying will be manifested first in heavy repair work, it is believed, with the railroads doing possibly a major portion in their own shops.

In point of domestic freight car buying last year was the poorest in the history of the car building industry. Final returns indicated that 10,694 freight cars were placed, of which approximately 6000 were awarded company shops. This left approximately 4000 for car builders. Comparisons follow:

	1931	1930	1929	1928
Jan.	100	5,072	13,196	4,160
Feb.	50	17,027	15,944	10,220
March	2,166	6,118	12,023	2,958
April	2,798	1,997	8,205	6,043
May	20	1,392	7,562	2,531
June	1,910	998	5,886	2,422
*July	617	1,389	341	582
*Aug.	1,304	1,111	2,854	677
*Sept.	703	576	4,517	1,378
*Oct.	980	4,116	19,506	2,853
Nov.	35	2,621	6,361	6,140
Dec.	11	2,729	9,710	4,799
Total	10,694	45,146	106,105	44,763

*Revised.

Chicago — Western freight car building shops view the car equipment market more hopefully in view of the possibility of settlement this month of the railroad wage question. Carriers are not expected to place orders for several months, even in the early event of arrangements for meeting bond interest and other charges. Burlington is inquiring for about 300 tons of forgings for running repairs, though its shops are down. Union Pacific, Chicago & Alton, and Chicago Great Western are reopening shops at various points. Western mills are expected to get about 8000 tons of the Erie rails.

Cleveland—The Erie railroad's inquiry for 1932 standard rails has not as yet been closed and formal inquiry from the Nickel Plate will not be expected for two months.

Birmingham, Ala.—Rail mill of Tennessee Coal, Iron & Railroad Co. resumed operations on slow schedule Jan. 4 The mill has been closed since July of 1931. Seaboard Air Line receivers have placed an order with the Tennessee company for 2800 tons of tie plates.

Car Orders Pending

Chicago, Burlington & Quincy, inquiry out for 300 tons of forgings for running repairs.

Navy department, 10 flat cars, 50-ton capacity; three for Portsmouth, N. H., two for Philadelphia, and five for Norfolk, Va.; bids Jan. 19.

Rail Orders Placed

Seattle municipal street railway, 125 tons, to Columbia Steel Co., San Francisco.

Semifinished Prices Show Further Easiness

Semifinished Prices, Page 48

Pittsburgh—Lack of substantial improvement in operations of finishing mills is restricting semifinished steel shipments and new business. Forging billets are in quiet demand for the automotive industry. Shipments of wire rods have been fairly active. Rerolling billets, slabs and sheet bars generally are quoted around $28, with forging billets $34, and wire rods $37.

Youngstown, O.—Restricted operating rates of independent sheet and strip mills keep down deliveries of sheet bars and billets. Repairs to the Republic Steel Corp.'s Warren, O., blooming mill have not been completed and shipments of semifinished steel for use at Warren are being made from the corporation's mills here. Billets, sheet bars and slabs bring $26, Youngstown and Cleveland.

Chicago—Billets and blooms, 4 x 4-inch base, now are quoted $29, a drop of $1 a ton, in line with the recently announced reduction of $1 in sheet bars. Sheet bars and billets now are on the same basis. Semifinished steel shipments continue slow. A few first quarter contracts have been closed.

Structural Shapes

Expect 25,000 Tons Active at Chicago Soon — Hoover Dam Tunnel Lining, 1500 Tons, Placed—New York's Tri-Boro Bridge Not Out Yet —Bid on Detroit Postoffice

STRUCTURAL SHAPE PRICES, PAGE 41

Chicago—Fabricators expect about 25,000 tons of structural steel will be active soon, chiefly public work. One of the largest immediate projects, 2200 tons for the outer drive bascule spans, is to be postponed owing to lack of municipal funds, contractors' bids having been returned unopened. The 1.60c quotation for plain material is being withdrawn, producers here announcing 1.70c for first quarter. Price has strengthened on steel piling, 215 tons having been let for the government cutoff wall in the Mississippi river at St. Paul-Minneapolis at 2.05c, Chicago.

New York—Awards and fresh inquiry are light, although general contracts have been placed for several state jobs. Cuzzi Bros. have placed 1200 tons for a school at Mount Vernon. Pier 34, a new job may take close to 2000 tons. The Triboro bridge, 12,000 tons, part of the span, is not yet out, although early inquiry is expected.

Philadelphia—Structural projects are a little more numerous, but orders are scattered and fabricated prices continue highly unsettled. Plain material is 1.60c to 1.70c, nearest mill, with the inside figure more representative .

Pittsburgh—Structural inquiry and awards general involve only small lots. Specifications for plain material show the market continuing 1.50c to 1.60c.

Cleveland—Thirty-five small structural bridges for the Ohio highway department went in Jan. 8, taking in the aggregate 990 tons. Some small quantities of sheet piling were involved. Shapes are 1.70½c to 1.80½, delivered Cleveland, following the recently applied 10 per cent freight surcharge.

Detroit—Interest is being revived in the federal building and post office here to take about 15,000 tons of structurals. Contractors' bids will close Feb. 15.

Contracts Placed

1500 tons, tunnel lining, Hoover dam project, Boulder City, Nev., to Consolidated Steel Corp., Los Angeles.

1200 tons, Washington junior high school, Mount Vernon, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.; Cuzzi Brothers Inc., Mount Vernon, contractors.

1100 tons, Union club, New York, to George A. Just Co., Long Island City, N. Y., through C. T. Wills, contractor.

650 tons, court house, Martinez, Calif., to Golden Gate Iron Works, San Francisco.

610 tons, bridge over Big Elk creek, Elkton, Md., to McClintic-Marshall Corp., Bethlehem, Pa.

540 tons, bridges, Broad and Savannah rivers, Georgia state projects, to Virginia Bridge & Iron Co., Roanoke, Va., through Wanamaker & Wells, Orangeburg, S. C., contractors.

500 tons, highway bridge, Illinois, to Illinois Steel Bridge Co., Jacksonville, Ill.

450 tons, theater, Providence, R. I., to Providence Iron & Steel Co., Providence through E. Turgeon contractor.

406 tons, four buildings and tunnel connections, Kings Park state hospital, Kings Park, Long Island, N. Y., to Lehigh Structural Steel Co., Allentown, Pa.; David L. Benstock Inc., Bay Shore, Long Island, contractor.

400 tons, highway bridge, Caldwell, W. Va., to American Bridge Co., Pittsburgh.

400 tons, pier shed, Cranberry street, Brooklyn, N. Y., to Ft. Pitt Bridge Works Co., Pittsburgh.

385 tons, telephone exchange building, Los Angeles, to McClintic-Marshall Corp., Bethlehem, Pa.

385 tons, woolen mill building, Charlottesville, Va., to Virginia Bridge & Iron Co., Roanoke, Va.

330 tons, four bridges, Nassau river, Nassau and Duval counties, state road department, Florida, to Ingalls Iron Works, Birmingham, Ala. C. G. Kershaw, Birmingham, contractor.

275 tons, highway bridges, Ohio, to McClintic-Marshall Corp., Bethlehem, Pa.; Mt. Vernon Bridge Co., Mt. Vernon, O.; Ft. Pitt Bridge Works Co., Pittsburgh, and unstated fabricators.

225 tons, grade and high schools, Glenshaw, Pa., to Guibert Steel Co., Pittsburgh.

215 tons, steel piling, government cutoff wall in Mississippi river at St. Paul-Minneapolis, to Inland Steel Co., Chicago, in addition to 200 tons of structural steel previously let to Lakeside Bridge & Steel Co., Milwaukee.

215 tons, two bridges, Lancaster, Pa., Pennsylvania state highway department, to McClintic-Marshall Corp., Bethlehem, Pa.

200 tons, bridge, San Saba river, Menard county, Tex., to Petroleum Iron Works, Beaumont, Tex.

206 tons, New York highway bridge, unstated location, to Lackawanna Steel Construction Co., Buffalo.

200 tons, Pennsylvania express shed, Newark, N. J., to American Bridge Co., Pittsburgh.

200 tons, filtration plant, Sacramento, Calif., to Palm Iron Works, Sacramento, Calif.

200 tons, highway span, for Illinois highway commission to Vincennes Bridge Co., Vincennes, Ind.

191 tons, work for Georgia highway department, to McClintic - Marshall Corp., Bethlehem, Pa.

170 tons, telephone exchange, Woodland avenue, Philadelphia, to Robinson Iron & Steel Co., Philadelphia.

125 tons, shapes and bars, addition, Douglas and Simmons school, Washington, to Shippers' Carline Corp., Milton, Pa., and Southern General Fireproof Co., Atlanta, Ga.; Little Construction Co., Charlotte, N. C., contractor.

120 tons, balcony, blast plant, Ford Motor Co., Dearborn, Mich., to R. C. Mahon Co., Detroit.

120 tons, bridge, Grand Trunk railroad, Michigan, to Wisconsin Bridge & Iron Co., North Milwaukee, Wis.

115 tons, I-beam span bridges and culverts, highway 34, Ellis county, Texas, to Houston Structural Steel Co., Houston, Tex.; Thomas & Ratliff, Rogers, Tex., contractors.

100 tons, shapes and specials for two ferry bridges with aprons, frames and miscellaneous, Panama canal, to Lehigh Structural Steel Co., Allentown, Pa.

100 tons or more, shapes, joists and miscellaneous steel, nurses' dormitory, Memorial hospital, Pawtucket, R. I., to Lehigh Structural Steel Co., Allentown, Pa., Providence Steel & Iron Co. and Central Iron Works, Providence, R. I. Central Engineering & Construction Co., Pawtucket, contractor.

100 tons or more, shapes and bars, addition, high school, Brookline, Mass., to Groisser & Shlager Iron Works, Somerville, Mass., and Concrete Steel Co., New York; E. J. Rappoli, Cambridge, Mass., contractor.

100 tons, shapes and plates, water tank and tower, federal building, Columbia, S. C., to Chicago Bridge & Iron Works, Chicago.

100 tons, office building, Maywood, Calif., for Pacific Coast Steel Corp., San Francisco, to McClintic-Marshall Corp., Bethlehem, Pa.

100 tons, New Jersey state road work, route 36, section 6, to Seacoast Iron Works, Red Bank, N. J.

100 tons or more, sanitarium building, Scotch Plains, N. J., to Albert Smith & Sons Inc., Irvington, N. J.

100 tons, steel joists, Eastern Star Home for Aged, Pasadena, Calif., to Soule Steel Co., Los Angeles.

100 tons state hospital, Wrentham, Mass., to Palmer Steel Co., Springfield, Mass., through Crane Construction Co., Boston.

100 tons, bridge over Freehold & Jamesburg railroad, route 35, Manasquan, N. J., to Seacoast Iron Works, Red Bank, N. J.

Awards Compared

	Tons
Awards, week ended Jan. 9	**12,333**
Awards, week ended Jan. 2	**17,107**
Awards, week ended Dec. 26	**45,520**
Awards, this week in 1931	**41,135**
Av. weekly awards, 1931	**34,236**
Av. weekly awards, 1932	**14,720**
Av. weekly awards, Dec.	**23,286**
Total awards to date, 1931	**55,766**
Total awards to date, 1932	**29,440**

100 tons, steam power plant, state colony, Gardiner, Mass., to Palmer Steel Co., Springfield, Mass.; Proffit & White Construction Co., Fitchburg, Mass., contractor.

Unstated tonnage, roundhouse, Chesapeake & Ohio railroad, Peru, Ind., to Trojan Steel Co., Charleston, W. Va., and Truscon Steel Co., Youngstown, O.; K. E. Reed & Co., Charleston, W. Va., contractor.

Contracts Pending

15,000 tons, postoffice and federal building, Detroit; general contractor bids close Feb. 15.

5000 tons, federal building, San Francisco; bids will be called for in January.

2200 tons, bascule spans for outer drive bridge, Chicago; postponed for several weeks because of lack of funds.

2000 tons, Block department store, Indianapolis, formal inquiry expected soon.

2000 tons, power house for Milwaukee Electric Railway & Light Co., Port Washington, Wis.

2000 tons, pier 34, New York, department of docks.

1300 tons, two bridges over Illinois river, near Joliet, Ill.

1100 tons, power transmission material, for Mexico.

1000 tons, postoffice, Texarkana, Tex.

1000 tons, Chamber street viaduct, Trenton, N. J., Parker & Graham, New York, low on general contract.

990 tons, 35 small bridge projects, Ohio state highway commission, Columbus, O.; general contract bids of Jan. 8.

800 tons, Brooklyn nurses' club building, Brooklyn, N. Y.

800 tons, high school, Pottstown, Pa.; bids taken Jan. 8.

650 tons, generator station, Public Service Gas & Electric Co., Kearney, N. J.

650 tons, court house, Martinez, Calif.; bids opened.

600 tons, postoffice, Long Beach, Calif.; plans being prepared.

550 tons, addition, Library of Congress, Washington.

525 tons, parochial school, Bronx, New York.

500 tons, postoffice, Rockford, Ill.; bids Jan. 6.

450 tons, county bridge, Niles, O.; plans out. Bids close Feb. 2.

450 tons, theater, Providence, R. I.

440 tons, postoffice, Youngstown, O.; A. W. Kutsche & Co., Detroit, low on general contract for limestone and Ralph Sollitt & Sons Construction Co., South Bend, Ind., low on sandstone. Included 20 tons reinforcing steel.

400 tons, Illinois state hospital building, Manteno, Ill.

350 tons, garage, Philadelphia Saving Fund society, Philadelphia; George A. Fuller Co., contractor.

350 tons, Fairview state hospital, Fairview, Pa.; E. R. Bastress Co., Mt. Carmel, N. J., contractor.

350 tons, cancer ward, San Francisco; bids to be called for in January.

350 tons, galvanized steel skeleton towers, platforms, extensions and footing plates, department of commerce, bids Dec. 22; McClintic-Marshall Corp., Bethlehem, Pa., low on ten 51-foot towers; H. H. Ward Co., Chester, Pa., low on most other 89 structures.

300 tons, bridge, Baltimore, for Baltimore & Ohio railroad.

250 tons, building, Delaware Light & Power Co., Wilmington, Del.

250 tons, crane runway, Parker Bros., Houston, Tex., bids in for structurals.

100-foot span, four-motor crane and reinforced concrete storage; D. M. Duller, Houston, Tex., engineer. Bids filed for action in January.

250 tons, filtration plant, Lancaster, Pa.

225 tons, three fire stations, New York.

215 tons, high school, Mt. Pleasant, Pa.; William F. Francis, Wilmington, Del., low on general.

200 tons, state bridges, Allegheny and Cecil counties, Maryland; bids in.

200 tons, highway bridge, Queens, Long Island, N. Y.

200 tons, storehouse, Navy, Lakehurst, N. J.; bids Jan. 13.

200 tons, landing stage, Cincinnati.

175 tons, bridge, Stelton, N. J., for Pennsylvania railroad.

154 tons, nurses' home, Union hospital, Fall River, Mass.

150 tons, soldiers and sailors orphans home, Xenia, O.; Galbreath & Leonard, Columbus, O., contractor. Included, 20 tons reinforcing steel.

150 tons, plate and shapes, Panama, opening Jan. 4; Bethlehem Steel Export Corp., New York, low. Same company also low on sheet required in No. 2712.

135 tons, school, Montclair, N. J.; bids in.

130 tons, state bridges, Robbs and Bear creeks, Fayette county, Tex.; D. F. Jones Construction Co., Little Rock, Ark., contractor.

100 tons, addition, state hospital, Blossburg, Pa.; R. B. McDaniel Co., New Brighton, Pa., contractor.

Concrete Bars

Large Prospects Dwindle but Small Jobs Increase—New York Delivered Price on Pittsburgh Mill Lengths Up—Many Small Postoffices Pending Over the Country

REINFORCING BAR PRICES, PAGE 41

New York—Sellers of Pittsburgh-shipped bars in this teritory have added 2.00c per 100 pounds to the New York delivered price, or 1.95c mill lengths. Less carload rates are much higher in comparison, from Pittsburgh the charge being 52.00c. Concrete Steel Co. has booked 500 tons for the First National Bank. Bates & Rodgers are low on the Cohoes-Waterford bridge. Bids closed this week on steel deckwork on the route 25 viaduct, northern New Jersey.

Pittsburgh—Inquiry is quiet, while specifications against old orders remain fairly active. Mill lengths continue 1.60c, Pittsburgh.

Cleveland—Aggregating 405 tons, 27 concrete bridge projects went in for general contract bids to the Ohio highway department Jan. 8, largest individual project being 41 tons. Michigan is taking bids Jan. 20 on several concrete highway jobs. Awards include steel for the veterans' hospital at Chillicothe, O.

Detroit—Contractors' bids for the Rock Island, Ill., dam have not been approved and consequently low submitted by S. A. Healey Inc., Detroit, is not final.

Chicago—Prospects have dwindled to numerous small-lot projects, although aggregating fair volume. Several large apartment building orders are hinging upon ability to finance. Prices are being held at the recently established higher levels.

Awards Compared

	Tons
Awards, week ended Jan. 9	**3,315**
Awards, week ended Jan. 2	**13,658**
Awards, week ended Dec. 26	**600**
Awards, this week, 1931....	**13,554**
Av. weekly awards, 1931	**6,808**
Av. weekly awards, 1932....	**8,487**
Av. weekly awards, Dec.	**4,623**
Total awards to date, 1931	**14,218**
Total awards to date, 1932	**16,973**

Contracts Placed

635 tons, Panama canal, opening of Dec. 30, to Bethlehem Steel Export Corp., New York.

500 tons, First National Bank, Wall and Broadway, New York, to Concrete Steel Co., New York, through Thomas Crimmins Contracting Co., subcontractor under Marc Eidlitz & Son, general contractor.

285 tons, highway bridge across Des Plaines river, Lyons, Ill., to Concrete Steel Co., New York.

260 tons, four bridges, Nassau river, Nassau and Duval counties, state projects, Florida, to Dudley Bar Co., Birmingham, Ala. C. G. Kershaw, Birmingham, contractor.

200 tons, veterans' hospital, Chillicothe, O., to Pollak Steel Co., Cincinnati, through H. G. Christman Co., South Bend, Ind., contractor. Seventy-five tons structurals to Indiana Bridge Co., Muncie, Ind.

200 tons, road work, Illinois, to Concrete Steel Co., New York.

200 tons, bridge, Roosevelt and Butterfield roads, Chicago, to Olney J. Dean Co., Chicago, through Airey Construction Co., Chicago.

150 tons, telephone exchange building, Los Angeles, to unnamed interest.

150 tons, First Church of Christ, Scientist, Santa Barbara, Calif., to unnamed interest.

150 tons, Eastern Star Home for Aged, Pasadena, Calif., to unnamed interest.

137 tons, school, Cincinnati, to West

Virginia Rail Co., Huntington, W. Va., through Penker Construction Co., Cincinnati. Forty-five tons structurals to Dayton Structural Steel Co., Dayton, O.

125 tons, bridge, Cottage Grove avenue, Chicago, to Concrete Steel Co., New York.

105 tons, bridges, Broad and Savannah rivers, Georgia state projects, to Dudley Bar Co., Chattanooga, Tenn., through Wanamaker & Wells, Orangeburg, S. C., contractors.

103 tons, improvement of Second street, Los Angeles, to unnamed interest.

100 tons, bars and mesh, naval research laboratory, Bellevue (Washington), D. C., to Kalman Steel Corp., Bethlehem, Pa., through George Peterson Inc., Baltimore, subcontractor under The Blackford Co., Greensboro, N. C., general contractor.

100 tons, bridges and culverts, highway 34, Ellis county, Texas, to Southern States Steel Co., Dallas, Tex.; Thomas & Ratliff, Rogers, Tex., general contractors.

100 tons, reinforcement for culverts, Atoka and Tishominge, Okla., to J. B. Klein Iron & Foundry Co., Oklahoma City, Okla.; Moran-Buckner Co., Muskogee, Okla., contractor.

100 tons, Kress store, Bakersfield, Calif., to unnamed interest.

100 tons, highway work, Monterey county, Calif., to unnamed interest.

100 tons, garage for Southern California Telephone Co., San Diego, Calif., to unnamed interest.

100 tons, Illinois road, to Concrete Steel Co., New York.

100 tons, school, Boston, to Barker Steel Co., Boston.

Unstated tonnage, 3000 sheets steel fabric reinforcing, Washington, to Wickwire Spencer Steel Co., Buffalo, at $1.34 a sheet, also 20 tons bars to Steel Products Co.

Unstated tonnage, foundations, civic auditorium, Grand Rapids, Mich., to Grand Rapids Steel & Supply Co., Grand Rapids.

Contracts Pending

650 tons, postoffice and federal building, Pittsburgh; Aronberg-Fried Co., Cleveland and New York, general contractor.

405 tons, 27 small bridge projects, Ohio highway commission, Columbus, O.; general contract bids of Jan. 8.

300 tons, techers college, San Jose, Calif.; bids Jan. 5.

300 tons, Cohoes-Waterford state bridge, New York; Bates & Rodgers, New York, low.

250 tons, state hospital, Manteno, Ill.; Michuda Bros. Construction Co., Chicago, low on general.

225 tons, museum of science and industry, Chicago; postponed to April.

206 tons, highway work in San Diego and Imperial counties, Calif.; bids opened.

200 tons, music hall, Northwestern university, Evanston, Ill.

200 tons, warehouse for Bekins Van & Storage Co., San Diego, Calif.; bids to be called for.

200 tons, exchange building for Illinois Bell Telephone Co., 2338-48 West Monroe street, Chicago.

160 tons, memorial tower, San Francisco; bids opened.

150 tons, state bridges, Arundel and Allegheny counties, Maryland; bids in.

136 tons, postoffice, Stockton, Calif.; bids opened.

134 tons, for Los Angeles county, Calif.; bids Jan. 11.

100 tons, court house, Martinez, Calif.; bids opened.

Pipe

Buffalo Buys 8000 Tons from Cast Maker—Pittsburgh Mill Gets 3000 Tons Steel for Line

PIPE PRICES, PAGE 52

New York—Low bids on 800 tons for yard stocks, Jersey City, N. J., figure back to weak foundry prices. Delivered low on 20-inch, making up the bulk of the tonnage, was $25; 8-inch, $26.50 and 6-inch, $37. Contractors' letting for Queens, Jan. 12, takes 840 tons and New York city will buy close to 15,000 tons for yards soon. Brooklyn Union Gas Co. is in the market for cast pipe. Another inquiry includes 3300 tons.

Boston—Weakness in cast pipe prices is emphasized by prices submitted for 2100 tons class B for Boston and approximately 800 tons of cement-lined for Providence, R. I. Low bids were $28.40 and $29.50, respectively, some specials for Providence being slightly higher.

Pittsburgh—Gulf Pipe Line Co. has placed 39½ miles of 8-inch seamless pipe with a local producer for a line in Oklahoma. The order involves about 3000 tons. Demand for standard pipe is lighter than usual for this period.

Chicago—Action is being deferred on the 10-inch pipe line from Glenpool, Okla., to Wood River, Ill., for the Ajax Pipe Line Co. Owing to the freight rate surchages, 40 cents a ton has been added to the Chicago delivered quotations for cast pressure pipe.

Cast Pipe Placed

8000 tons, water pipe, Buffalo, to United States Pipe & Foundry Co., East Burlington, N. J. Efforts to induce Buffalo to use steel proved unsuccessful because of higher cost of installation.

2100 tons, 4 to 16-inch, class B, Boston, to United States Pipe & Foundry Co., East Burlington, N. J.

1000 tons, 24-inch, South Milwaukee, Wis., to American Cast Iron Pipe Co., Birmingham, Ala.

800 tons, 6 to 20-inch, yard stocks, Jersey City, N. J., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

800 tons, 8 to 24-inch, cement-lined, Providence, R. I., to R. D. Wood & Co., Florence, N. J.

800 tons, 4 to 24-inch, class B, Providence, R. I., to R. D. Wood & Co., Florence, N. J.

150 tons, 6 and 8-inch, Pasco, Wash., to American Cast Iron Pipe Co., Birmingham, Ala.

106 tons, 20-inch, class A, sewer, section M-3, Mamaroneck project, Westchester county, New York, to United States Pipe & Foundry Co., East Burlington, N. J.; A. B. Byrne & Sons, contractors; bids of Dec. 5.

Steel Pipe Placed

3000 tons, 39½ miles, 8-inch seamless pipe for Gulf Pipe Line Co. line in Oklahoma, reported placed with National Tube Co., Pittsburgh.

Unstated tonnage, hammer-welded steel pipe, United States engineer, Jacksonville, Fla., to Mobile Stove & Pulley Co., Mobile, Ala., $3492.65. Twenty sections, pontoon pipe, Wilmington, N. C., to Welded Products Co., Birmingham, Ala., $2280.

Cast Pipe Pending

2179 tons, 18 and 20-inch, Signal Hill, Calif.; call for bids cancelled. New bids to be taken.

840 tons, mostly 12-inch, Queens (New York), also 36 tons fittings, contractors' letting; bids Jan. 12, department water supply, gas and electricity.

155 tons, 4 to 8-inch, class 150, Orange county waterworks district, Santa Ana, Calif.; bids opened.

137 to 207 tons, 4 and 6-inch, class B or 150, Whittier, Calif.; bids of Jan. 4.

Unstated tonnage, 1.4 miles, 20 and 12-inch, water pipe, Erie, Pa., waterworks; plans now being prepared. James S. Dunwoody, Erie, superintendent of waterworks.

Unstated tonnages, 32,800 feet, wrought iron pipe, United States engineer, Memphis, Tenn.; Frick-Reid Supply Corp., Pittsburgh, low, $6592.38 f.o.b. Pittsburgh, and $7041.43 f.o.b. Bridge Junction, Ark.

Steel Pipe Pending

859 tons, 18 and 20-inch, welded steel pipe, Signal Hill, Calif.; former bids cancelled. New bids soon.

350 tons, overflow pipe line, West Seattle, Wash.; bids Jan. 11.

120 tons, 6-inch, black steel pipe, unit 5, Government Island construction, San Francisco; bids in.

Unstated tonnage, 89,000 feet up to 1½-inch galvanized wrought iron pipe, butt-welded, for Fort Mason, San Francisco. Also large quantity of galvanized malleable and soil-pipe fittings; bids in Jan. 11.

Unstated tonnage, two oil pipe lines, Mt. Pleasant, Mich., field; one each by Peerless Oil Co. and White Star Refining Co., Detroit.

Unstated tonnage, 43,000 feet wrought iron or steel galvanized pipe, up to 4-inch, Panama, opening Jan. 4, No. 2712; Jones & Laughlin Steel Corp., Pittsburgh, low, $4650.30.

Unstated tonnage, 10,300 feet galvanized wrought iron or steel, 10,000 feet ½-inch and 300 feet, 12-inch, Panama; United States Steel Products Co., New York, low. Bids Dec. 30.

Unstated tonnage, 14,595 feet, mostly 2 and 3-inch, black steel pipe, United States engineer, Pittsburgh; bids in.

Unstated tonnage, 2040 feet, welded steel pipe, 10 gate valves and fittings, quartermaster, Camp Knox, Ky.; bids in.

Unstated tonnage, gas line connecting Detroit City Gas Co., Detroit, with Panhandle Eastern Pipe Line Corp. line in eastern Indiana. Plans under discussion pending establishment of community of interests of Northern Natural Gas Corp. and Panhandle Eastern Pipe Line Corp.

Strip

Prices Lack Strength and Concessions Are General in Hot-Rolled—Shipments Gain Little

STRIP PRICES, PAGE 41

Pittsburgh—Strip orders the past week were disappointingly light, lacking improvement over the late December rate. December shipments were slightly heavier than in November. Releases from the Ford Motor Co. are more numerous but involve only small lots. Prices continue rather unsteady but producers generally are quoting 1.45c and 1.55c for the two sizes of hot strip. Higher figures generally have disappeared. Cold-rolled strip is 2.00c to 2.10c.

New York—Strip consumers show little interest in contracts, buying from hand-to-mouth and on a restricted scale. Hot strip is 1.45c to 1.50c and 1.55c to 1.60c, Pittsburgh, for the wide and narrow, respectively. Cold-rolled strip is easy at 2.05c, Pittsburgh.

Philadelphia — Specifications for steel strip have improved slightly. Prices are unchanged at 1.45c to 1.50c and 1.55c to 1.60c, Pittsburgh, for the wide and narrow sizes of hot-rolled. Cold-rolled is quoted at 2.05c, Pittsburgh.

Youngstown, O.—Somewhat larger volume of strip business is being placed. Stocks are being replenished. Some low quotations are being placed before large tonnage buyers of hot-rolled, although it is not definitely known that the latter have closed at the low figures. Down to 1.40c has been offered on wide strip and to 1.50c on narrow, ranging upward to 1.60c, Pittsburgh. Cold-rolled is 2.00c to 2.10c, Pittsburgh, and Cleveland.

Cleveland—Though the market for cold-rolled strip is virtually absent, hot-rolled continued last week to display the activity of December, which for several interests was the best month in sales for four, five or six months prior. Specifications are coming chiefly from the automotive trade for immediate delivery. The hot-rolled base price is unsettled, with shading again becoming prominent, so that 1.50c and 1.60c, Pittsburgh base, appear nominal. Orders are being reported at under the 1.45c and 1.55c for wide and narrow.

Chicago—Further concessions are noted in hot-rolled strip steel, but producers are quoting for first quarter 1.55c to 1.60c, Chicago, for wide strip, and 1.65c to 1.70c for narrow. Scattered contracts have been signed on this basis. Production is 20 to 25 per cent. Automotive buying is held up by the Ford program, but General Motors Corp. releases in this district are fair. Cold-rolled operations are at 20 per cent.

Operations at 25 Per Cent Recover All Holiday Loss

Pittsburgh—Steel operations show little change following improvement after the holiday period. Ingot production continued unchanged at slightly under 25 per cent last week with blast furnace schedules unchanged at 10 active steelworks stacks of 54. Tin plate output holds at 40 to 45, with sheet 25 to 30. Strip is slightly higher at 25 to 30 with pipe unchanged at 25 per cent.

Operations, week of Jan. 9	25
Operations, week of Jan. 2	20-24
Operations, week of Dec. 26	15-20
Operations, this week, 1931	42.5
High, 1931-32 (March 19)	57
Low, 1931-32 (Dec. 26)	15-20

Philadelphia — Steel operations were up two points to 16-17 per cent last week over the week prior. Further slight gains are expected over the rest of January.

Buffalo—District steelworks face uncertain operating schedules this week. Operations during the week ending Jan. 9 were 16 per cent, and unless last week's one idle plant resumes production there is not likely to be much change this week. Only six open hearths were active of 37 in the district last week.

Cleveland—Ingot production was steady last week at the 32 per cent rate, reflecting activity in 11 of 34 potential open hearths. For this week the rate will be likewise unchanged at 32 per cent. This represents four open hearths pouring at each of American Steel & Wire Co., Corrigan, McKinney Steel Co., and three at Otis Steel Co.

Chicago—Ingot output this week will be a shade above 20 per cent. This is virtually unchanged from the week just closed. Nine of the district's 36 steelworks blast furnaces are active. Finishing mill activity is not much above the ingot rate.

Youngstown, O.—Steel operations averaged 32 per cent last week, unchanged from the previous week. This week they are expected to advance to 33 per cent. Twenty-one of 66 open hearths are melting. Sheet production is estimated at 30 per cent.

Birmingham, Ala.—With ten open-hearth furnaces of 18 being operated by Tennessee Coal, Iron & Railroad Co. at Fairfield-Ensley and three of six by the Gulf States Steel Co. at Gadsden, Ala., operations were up ten points to 60 per cent capacity last week.

Warehouse Prices Under Pressure at Some Centers

Warehouse Prices, Page 52

New York—Sheet prices are mixed and weak, although no official reduction has been made in listed quotations. In combination orders, however, black, blue annealed and galvanized are forced under listed prices. Warehouse volume is light. Cold finished stock out of warehouse has been reduced $2 a ton. New prices became operative Jan. 1.

Boston—No. 10 blue annealed sheets were reduced $2 a ton to 3.50c, effective Jan. 4, by a leading distributor here. No. 8 and 16 blue annealed sheets are now also included in the quantity differential pricing plan.

Philadelphia — Prices are unchanged but weak. Trading is improving slowly.

Pittsburgh—Sales show only a slight improvement over curtailed activity of the holiday period. Prices of nails and wire have been advanced 10 to 15 cents per 100 pounds.

Detroit—Steel sales from stock are sluggish, with the one exception of occasional good pickup orders from a leading automobile producer. Cold-finished steels are unchanged in price. Modified cutting charges from those recently applied at Chicago are now in effect here.

Chicago—Application of new cutting charges on plates from warehouse stock has resulted in net advances on some sizes and price declines in others. Base prices are unchanged except that for sheared plates heavier than 2 inches, base of 3.75c applies instead of 4.50c to 5.50c, although with the addition of cutting charges to the new price net will be about the same to the buyer. Warehouse shipments still are slow. Jobbers are expected to stock soon on spring roofing equipment.

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago furnace	$16.50
Pittsburgh, dist. fur.	16.50 to 17.00
Pittsburgh, delivered	17.13 to 18.13
Valley furnace	15.50 to 16.00
Cleveland fur., local del.	16.00
Philadelphia, delivered	15.26 to 15.76
Virginia furnace	17.50
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.15 to 19.90
Buff., all-rail, Newark	17.53 to 18.28
Ala., Bir. fur., local del.	12.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42 to 15.42
Alabama, del. Cincinnati	13.69 to 14.19
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	14.69 to 15.19
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.90 to 20.40
Buffalo, all-rail Newark	18.28 to 18.78
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	15.76 to 16.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	16.26 to 16.76

MALLEABLE

Valley furnace	16.00 to 16.50
Cleveland fur., local del.	16.00
Pittsburgh dis. fur.	16.50 to 17.00
Pittsburgh, delivered	17.13 to 18.13
Chicago, furnace	16.50
Buffalo fur., local del.	15.50 to 16.00
Eastern Penna., delivered	17.76 to 19.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.50 to 16.00
Pittsburgh, delivered	16.13 to 17.13
Eastern Penn., del.	16.00 to 16.50
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	15.00

BESSEMER

Valley furnace	16.00 to 16.50
Pittsburgh, delivered	17.13 to 18.13
Pittsburgh, furnace	16.50 to 17.00

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	15.50
Pittsburgh district fur.	16.00 to 16.50
Pittsburgh, delivered	16.63 to 17.63

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$19; 7—$19.50; 8—$19.00 to $21.00; 9—$20.50; 10—$21; 11—$22; 12—$23; 13—$25.

BESSEMER FERROSILICON

Jackson County, O., fur. in per cents: 10—$23; 11—$24; 12—$25; 13—$27; 14—$29; 15—$31; 16—$33.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.25 to 2.35
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.76 to 9.16
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	4.50
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports	
Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	9.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	9.50 to 10.00
North African low phos.	8.00 to 9.00
Swedish basic, 65%	8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.50
Newfoundland fdy., 55%	8.00
Tungsten, spot and future short ton unit, duty paid	$11.00
Chrome ore, 48% net ton c.i.f.	$18.00 to 19.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 cents
South African, 52%	23 to 24 cents
South African, 49-51%	22 to 23 cents
South African, 44-47%	21.00 to 21.50
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$38.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	38.00
Joliet, Ill., East Chicago, Ind.	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$65.00

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$45.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Balt. base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$27.00 to 29.00
Pittsburgh, bessemer	27.00 to 29.00
Youngstown	27.00
Cleveland	27.00
Philadelphia	33.75 to 34.75
Chicago	29.00
Forging, Chicago	35.00 to 36.00
Forging, Pittsburgh	34.00 to 35.00
Forging, Philadelphia	39.75

SHEET BARS

Pittsburgh	27.00 to 28.00
Youngstown	26.00
Cleveland	26.00
Chicago	29.00

SLABS

Pittsburgh	29.00
Youngstown	27.00
Cleveland	27.00

WIRE RODS

Pittsburgh, Cleveland	35.00 to 37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.50c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$75.00
*Ferromanganese, del. Pittsburgh	79.85½
Spiegeleisen, 19-20%, domestic fur. spot†	27.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do. less carload	85.00
Do. 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do. for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.20
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do. under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis, (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50
Ferromolybdenum, stand. 50-60 per cent, per lb.	$1.00
Cal. Molybdate, lb. cont.	.85

†Carloads. Differentials apply to quant.
*To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky, Illinois mines, net ton	$13.00
Washed gravel, import duty paid tide, gross ton	13.50

Pig Iron

Southern Iron Cut to $10 for Northern Shipment—Three Makers Share Large Order

PIG IRON PRICES, PAGE 48

Pittsburgh—Pig iron demand has improved but little since the holiday period. Foundry operations have increased but new buying of iron is deferred, and shipments against old orders also are quiet. Requirements of nonintegrated steel producers are light. Inquiry is almost entirely lacking. Prices still lack a test, being nominally unchanged at $15.50 to $16, valley, for No. 2 foundry and $16 to $16.50 for bessemer and malleable. Basic is quoted $15, valley.

Boston—While slightly more active, pig iron buying is confined mainly to small lots. Prices are mixed, the situation being confused by new rate charges and credit considerations. Sellers are inclined to tighten on terms. Under $17 is reported offered for Dutch iron recently arrived at Providence, 5000 tons to be sold from dock. Receipts of Indian iron also are heavier, at $17.50 to $18.50, dock. New England iron is unchanged. Buffalo iron is reported sold at $19, delivered.

Philadelphia — Southern pig iron has been reduced $1 a ton to $15 to $15.25, Philadelphia docks, plus the new freight surcharge. Other prices are unchanged. Trading is light.

Buffalo—The recent reduction of $1 a ton for local delivery has stimulated sales, but consumption still is restricted. Eastern business continues to be placed at prices which Buffalo furnaces refuse to meet.

Youngstown, O.—Blowing out of the Shenango stack recently and occasional banking of the Hubbard, O., stack restricts further the production of merchant iron. Irregular shipments are made from furnace piles as moderate needs develop. Quotations continue unchanged.

Cleveland—General Motors has arranged with three lake furnace interests for 100,000 tons of pig iron in 1932, a Buffalo producer sharing the business this year with Detroit and Toledo furnaces. Competition was unusually keen, General Motors being the largest buyer, but price details have not been revealed.

The reduction of $1 to $10, Birmingham, is not confined to one producer, as several are quoting $10, figuring with freight to $16.14, delivered here, compared with $16, base, Cleveland furnace, plus local switching charges. Lake furnaces continue to quote $15 to $15.50, base, for delivery outside local territories. The current market is dull. While the freight surcharge in interstate commerce was fixed at 12 cents a net ton, the Ohio commission has decided that it shall apply on gross tons in this state, whereas when an Ohio furnace ships a gross ton to another state the surcharge is 13.4 cents. Local switching charges are up 10 per cent.

Cincinnati — Southern pig iron prices are easy, and though $11 still remains the nominal quotation it is believed an attractive inquiry would develop concessions. Northern iron prices have been weakened by keen competition.

Chicago—Reduction of $1 a ton in southern pig iron for shipment to the Chicago-Milwaukee area and in western Michigan has been localized to this territory and is not affecting other northern markets, according to information here. The reduction was induced largely by competition in the Michigan automotive district. Shipments of northern iron have slowed down, following the spurt before the emergency freight surcharge became effective. The northern market is not yet tested by important sales, and the base furnace price is nominal at $16.50.

Surveys of shipping releases indicate a heavier movement of coke iron this month.

St. Louis—Demand continues extremely quiet. New automotive orders are lacking and foundries still are relying on miscellaneous business to keep going. Stove and implements plants are almost entirely idle, and have no plans for resuming in the near future. December shipments of stoves and heating apparatus were the smallest for the month in more than a decade. One southern furnace has reduced its price $1 a ton, to $10, base. This reduction is causing some confusion as large stove buyers are insisting on a comparable reduction.

Birmingham, Ala.—Melters are maintaining their policy of buying in small quantities as required, feeling secure in obtaining prompt delivery. The base price remains $12 for local delivery, and usually $11 for outside shipment, though few orders are being received from other points than in Alabama.

Toronto, Ont.—A moderate improvement in sales has followed the holiday lull, but no contracting is being done for first quarter delivery.

New York—Pig iron sales are comprised of small lots for early shipment. Southern iron has been reduced $1 a ton for delivery here. Offerings of foreign iron are becoming more numerous. The Chateaugay Ore & Iron Co. has blown in its stack at Lyon Mountain, N. Y.

Ferrotitanium Contract Price Is Reduced

Ferroalloy Prices, Page 48

New York—Most contracts for ferromanganese are in, according to sellers. The market is $75, duty paid, on lots up to 1000 tons. Domestic spiegeleisen, 19 to 21 per cent, is $27, furnace.

The new contract price of ferrotitanium is $137.50 a net ton in carlots, for 15 to 18 per cent titanium and 6 to 8 per cent carbon, producers' plants, freight allowed. The previous quotation was $150. On spot business, new prices are 8.50c a pound in ton lots and 9.00c a pound in less than ton lots, freight allowed in both cases.

Pittsburgh—Ferroalloys shipments show only a slight improvement this month. Contracting for the first half is nearly completed, with the market continuing $75 for ferromanganese and $27 for spiegeleisen.

Chicago—Ferroalloys contracting has been on a parity with the 1930-31 contracting. Ferromanganese contracting is virtually closed for the season. Shipments of all ferroalloys are at a low ebb.

Bolt, Nut, Rivet Sales at Slightly Better Rate

Bolts, Nuts, Rivets Prices, Page 41

Pittsburgh—Shipments of bolts, nuts and rivets are at a quiet, unchanged rate although slightly improved over activity during the holiday period. Jobbers are slow to replace stocks reduced prior to inventory and specifications from consumers are limited to immediate needs. Prices show weakness in some districts with the market generally continuing 73, 10 and 10 off for bolts and nuts and 2.25c, Pittsburgh, for large rivets.

Chicago—Warehouses are doing less shopping for lower prices in bolts and nuts than late in December. Specifications are extremely light, small and mixed carload orders predominating. Structural rivets are unchanged at 2.35c, Chicago, in carload lots.

Scrap

Steelmakers Buying Tonnages at Market—Some Prices Go Lower—Demand Is Quiet

Chicago—Many buyers now indicate their belief that scrap values have declined to the minimum and that an upturn in finished steel and castings demand will find many scrap grades decidedly scarce. The emergency freight surcharge of 6 cents a ton, in addition to the recent increase in Chicago switching district rates, as affecting movements in the Chicago-Indiana industrial area, has added a further burden to dealer interests. Some views are that the added rates will aid materially in stabilizing prices on a higher level. Heavy melting steel is nominal at $7.50 to $8, but negotiations are being made for a quantity order at $8. Stocks of scrap in the yards of large steelworks melters have diminished.

Boston—Shipments of heavy melt-

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	6.50 to 7.00
Boston, dealers	4.00 to 4.50
Buffalo, No. 1	8.00
Buffalo, No. 2	6.25 to 6.50
Chicago	7.50 to 8.00
Cinci., deal.	6.75 to 7.25
Cleve., No. 1	7.25 to 7.75
Cleve., No. 2	7.00 to 7.50
Det., No. 1 deal.	5.50 to 6.00
Det., No. 2 deal.	4.00 to 4.50
E. Pa. del. mill	7.00 to 8.00
N. Y. deal. R. R.	4.50 to 5.50
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	3.50 to 4.00
Pitts. No. 1	10.00 to 10.50
St. L. No. 1 sel.	7.00 to 7.50
Federal, Ill.	6.50 to 7.00
Granite City, Ill.	6.00 to 6.50
Valleys, No. 1	9.00 to 9.50

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.50
Chi. (Factory)	6.00 to 6.50
Cleveland	7.00 to 7.25
Detroit, dealers	5.50 to 6.00
E. Pa. new mat.	7.00 to 8.00
Pittsburgh	9.75 to 10.25
Valleys	8.25 to 8.75

BUNDLED SHEETS

Buffalo	5.50 to 5.75
Cinci., deal.	6.25 to 6.75
Cleveland	6.00 to 6.50
Eastern Pa.	6.00 to 6.50
Pittsburgh	9.25 to 9.75
St. Louis	3.50 to 4.00

SHEET CLIPPINGS LOOSE

Chicago	3.75 to 4.25
Cincinnati	3.50 to 4.00
Detroit, dealers	3.00 to 3.50
St. Louis	3.50 to 4.00

STEEL RAILS SHORT

Birmingham	10.00 to 11.00
Boston, dealers	4.25 to 4.75
Buffalo	10.00 to 11.00
Chicago (3 ft.)	8.75 to 9.25
Chicago (2 ft.)	9.75 to 10.25
Cinci., deal.	12.00 to 12.50
Detroit, deal.	10.50 to 11.00
Pitts. (open-hearth, 3 ft. and less)	12.00 to 12.50
St. Louis	11.00 to 11.50

STOVE PLATE

Birmingham	6.50 to 7.00
Boston, con.	4.50 to 5.00
Buffalo	8.00 to 8.50
Chicago, net	6.00 to 6.50
Cinci., deal. net	4.50 to 5.00
Det., net deal.	3.00 to 3.50
Eastern Pa.	7.00
N. Y., deal. mill	4.75 to 5.50
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	10.00 to 11.00
Chicago	8.50 to 9.00
Eastern Pa.	9.00 to 10.00
Pittsburgh	10.75 to 11.25
St. Louis	8.50 to 9.00

ANGLE BARS—STEEL

Chicago	8.00 to 8.50
St. Louis	7.50 to 8.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	11.00 to 11.50
Cleveland bil. and bloom crops	14.00 to 14.50
Eastern Pa.	12.00
Pittsburgh billet bloom crops	14.00 to 14.50
Pitts., sheet bar crops	13.00 to 13.50

FROGS, SWITCHES

Chicago	7.75 to 8.00
St. Louis	8.00 to 8.50

SHOVELING STEEL

Chicago	7.50 to 8.00
Cleveland	6.25 to 6.50
St. Louis	6.50 to 7.00

RAILROAD WROUGHT

Birmingham	7.00 to 7.25
Boston, dealers	7.00 to 7.50
Buffalo, No. 1	6.25 to 6.50
Buffalo, No. 2	8.00 to 8.25
Chicago, No. 1	7.25 to 7.85
Chicago, No. 2	7.50 to 8.00
Cinci., No. 2	6.75 to 7.25
Eastern Pa.	9.50
N. Y., No. 1, deal.	7.00 to 7.50
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	5.00 to 5.50
St. Louis, No. 2	6.50 to 7.00

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	9.50 to 10.00
N. Y., deal	5.00 to 5.50

BUSHELING

Buffalo, No. 1	6.25 to 6.50
Chicago, No. 1	5.50 to 6.00
Cinn., No. 1 dl.	5.00 to 5.50
Cinn., No. 2	3.50 to 4.00
Cleve., No. 2	4.25 to 4.50
Det., No. 1 new deal.	4.50 to 5.00
St. L., No. 1	6.00 to 6.50
Val. new No. 1	8.50 to 9.00

MACHINE TURNINGS

Birmingham	3.00 to 3.50
Boston, dealers	1.05 to 1.55
Buffalo	4.75 to 5.25
Chicago	4.00 to 4.50
Cinn., deal.	3.25 to 3.75
Cleveland	4.00 to 4.50
Detroit	2.75 to 3.25
Eastern Pa.	4.50
N. Y., deal.	1.50 to 2.00
Pittsburgh	7.00 to 7.50
St. Louis	3.00 to 3.50
Valleys	6.50 to 7.00

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	1.25 to 1.50
Buffalo	6.00 to 6.25
Cinn., deal.	3.25 to 3.75
Cleveland	4.25 to 4.75
Detroit, deal.	3.50 to 4.00
Eastern Pa.	3.00 to 3.50
N. Y., deal.	1.50 to 2.00
Pittsburgh	6.75 to 7.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.00 to 3.50
Boston, chem.	6.50 to 7.25
Boston, deal.	1.05 to 1.55
Buffalo	6.00 to 6.25
Chicago	3.00 to 3.50
Cinn., deal.	3.25 to 3.75
Cleveland	4.25 to 4.75
Detroit, deal.	3.50 to 4.00
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	10.50 to 12.00
N. Y., deal.	2.00 to 2.50
Pittsburgh	6.75 to 7.00
St. Louis	5.00 to 5.50

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	5.50 to 6.00
Chicago, net	5.75 to 6.25
Cincinnati	5.50 to 6.00
Eastern Pa.	7.00
N. Y., deal.	5.00 to 5.50
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	6.25 to 6.50
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	4.75 to 5.25

FORGE SCRAP

Boston, deal.	1.50 to 2.00
Chicago	10.50 to 11.00
Eastern Pa., del.	6.75

ARCH BARS, TRANSOMS

Chicago, net	8.50 to 9.00
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	7.00 to 7.50
Chi., steelworks	6.00 to 6.50
Cleveland	6.75 to 7.00
Eastern Pa. del.	7.00 to 8.00
Pittsburgh, O. H.	8.75 to 9.25
St. Louis	6.00 to 6.50

STEEL CAR AXLES

Birmingham	11.50 to 12.00
Boston, ship. pt.	11.00 to 11.50
Buffalo	12.00 to 12.50
Chicago	12.25 to 12.90
Eastern Pa.	15.50 to 16.00
St. Louis	11.50 to 12.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	7.85 to 8.40
N. Y., deal.	9.00 to 9.50
St. Louis	9.00 to 9.50
E. Penna.	15.00 to 15.50

CAR WHEELS

Birming. iron	8.00 to 9.00
Boston, iron	12.50 to 13.50
Buffalo, iron	9.50 to 10.00
Buffalo, steel	10.00 to 10.50
Chicago, iron	8.00 to 8.50
Chi., rolled steel	8.50 to 9.00
Cincinnati, iron	9.50 to 10.00
E. Pa. steel	9.00 to 10.00
E. Pa. iron	11.00 to 11.50
Pitts. iron	10.00 to 10.50
Pitts., steel	10.75 to 11.25
St. Louis, iron	7.00 to 7.50
St. Louis, steel	7.50 to 8.00

NO. 1 CAST SCRAP

Birmingham	8.50 to 9.00
Buffalo (Mach.)	8.50 to 9.00
Boston, textile	7.00 to 8.50
Chicago, mach.	8.90 to 9.50
Chi., railroad	8.10 to 8.70
Chicago, agri.	7.50 to 8.10
Cinn., mach. cup., gross	10.00 to 10.50
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa. cupola	11.50
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	12.00
Pitts., cupola	10.00 to 10.50
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	7.50 to 8.00
St. L., No. 1	7.00 to 7.50

HEAVY CAST

Boston	6.00 to 6.50
Bost. mach. cast	8.00 to 9.00
Buffalo, break	5.50 to 6.00
Cleve., break	6.00 to 6.50
Detroit, auto, net deal.	10.00 to 10.50
Det., break., dl.	4.75 to 5.25
Eastern Pa.	9.00 to 9.50
N. Y. break, dl.	5.75 to 6.00
N. Y. No. 1 dl.	7.00 to 7.50
Pittsburgh	8.00 to 8.75

MALLEABLE

Boston R. R.	11.50 to 12.00
Buffalo	9.50 to 10.00
Chicago, agri.	7.00 to 7.50
Chicago, R. R.	7.00 to 7.50
Cinci., R. R. del.	9.25 to 9.75
Cinci., agri. del.	9.00 to 9.50
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.00 to 9.50
St. Louis, rail	5.00 to 5.50

RAILS FOR ROLLING
5 feet and over

Birmingham	10.00 to 10.50
Boston, deal.	6.00 to 7.00
Buffalo	8.50 to 9.50
Chicago	10.50 to 11.00
Eastern Pa.	11.50 to 12.00
New York	6.25 to 6.75
St. Louis	9.50 to 10.00

LOCOMOTIVE TIRES

Chicago, cut	10.00 to 10.50
St. L., No. 1	8.50 to 9.00

LOW PHOS. PUNCHINGS

Chicago	10.00 to 10.50
Buffalo	10.00 to 11.00
Eastern Pa.	12.00
Pittsburgh	11.00 to 11.50

ing steel are light, with consumers inclined to refuse $7 at Central Massachusetts. Offers of $6.50 have been made. Dealers in some cases are absorbing the increased freight rate, offering $3.30 to $3.50 for No. 2 steel and $4.25 for mixed cast. The New England pipe foundry is taking a few cars of cast at $8.

New York—Activity in scrap is limited largely to light shipments of breakable cast, Harrisburg, Pa., taking some tonnage with dealers paying $9, delivered. Some bundled skeleton is moving to that point at $6 and stove plate at $7. Florence, N. J., is taking cast at $8.50, but is reported about to curtail operations. Demand for heavy melting steel is light, some No. 1 being bought for barge storage at $5.50 by a mill interest.

Philadelphia—Several grades of steel and iron scrap have been marked down slightly, including knuckles and couplers, low phosphorous grades and steel wheels. Shipments to Sparrows Point, Md., and Lackawanna, N. Y., have been ordered stopped by Bethlehem Steel Co. and other leading consumers continue embargoes. Northern Metal Co. was high bidder at the opening of bids at the League Island navy yard, bidding $10.87 per ton on cars at the yard for 6000 tons of armor plate and $3.09 per ton on 10,000 tons of ship scrap of shipping size.

Pittsburgh—Purchases of heavy melting steel have been confined recently to one consumer, but only small lots have been involved and the purchase price has continued at $10.25. Shipments to other mills still are suspended and activity in most other grades is extremely light. Prices continue partly nominal but are unchanged.

Buffalo—Bethlehem Steel Co. is reported to have purchased upwards of 4000 tons of No. 1 heavy melting steel at its new $8 price, including a lot of 1000 tons from a Rochester, N. Y., dealer. This is the only large scrap transaction of the new year.

Cleveland—The iron and steel scrap trade moved into the new year at a snail's pace in the Cleveland district, but with apparently a little more acceleration in the Youngstown area. At Cleveland, the leading wire producer continues to take in some shipments on contracts from two dealers but this is the only Cleveland consumer accepting shipments. A Valley melter bought twice its usual weekly tonnage to make up for holiday lack of contracting, placing the tonnage with its regular sources at Youngstown.

Detroit—Machine shop turnings have receded 25 cents on lack of buying, and borings and turnings give signs of a decline. Otherwise the situation is unchanged and dull.

Cincinnati—Buying interest in the steel and iron scrap market is being revived slowly. Quotations are nominally unchanged .

St. Louis—The same conditions of dullness which marked the closing weeks of December continue in iron and steel scrap. Prices remain unchanged at the record low levels which obtained during the closing weeks of 1931. The heavily curtailed melt and lack of new business indicate scant prospects for recovery during the next few weeks.

Birmingham, Ala.—No change in buying policy is seen in early purchases, small lots ruling and at the lowest prices possible.

Toronto, Ont.—New developments are absent from the iron and steel scrap markets. Demand continues dull and consumers show little interest. Sales for the week were in single car lots and no big tonnages were closed.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Iron Ore Stocks at Lake Erie Ports Reduced

Iron Ore Prices, Page 48

Cleveland — December iron ore shipments from Lake Erie docks to interior furnaces amounted to 174,885 tons, compared with 137,299 tons in the month in 1930, according to the Lake Superior Iron Ore association. The increase is attributed to the mild weather, and also to low stocks at furnaces. Shipments for the year were 11,188,153 tons, less than half the 23,273,204 tons in 1930. The amount of ore remaining on dock Jan. 1 was 5,874,235 tons, 456,274 tons less than a year ago.

Coke

Beehive Foundry Shipments Slightly Heavier—Some Makers Absorbing Surcharges

COKE PRICES, PAGE 48

Pittsburgh—Shipments of foundry coke have improved slightly since Jan. 1, with resumption of operations by some plants. The market continues $3.25 to $4.50. Movement of furnace coke, however, continues slow. Some new contracting is being done by smelters, the market continuing around $2.35. Occasional spot sales are made at $2.25. Demand for heating coke is quiet.

New York—By-product foundry coke, delivered Newark, N. J., now is $8.76 to $9.16, this new spread reflecting the added surcharge of 6 cents per ton. Delivered prices in New England and Pittsburgh and Philadelphia, however, are unchanged, as producers in those districts quote on a delivered basis, instead of an ovens basis as in northern New Jersey, and have decided to absorb the surcharge. Beehive furnace coke is unchanged at $2 to $2.25, Connellsville. Beehive foundry coke is $3.25 to $3.50, Connellsville, for the common brands, and $4.50, Latrobe, for the premium grades.

Cincinnati—By-product foundry coke specifications remain light. The price holds at $9, delivered, Cincinnati.

St. Louis—Reflecting the low rate of the melt at mills and foundries, coke specifications have fallen to the minimum. New orders are limited to carloads, and the total is insignificant.

Birmingham, Ala.—The Tennessee Coal, Iron & Railroad Co. has lighted two additional batteries of ovens at its Fairfield works, to supply its own requirements. The average for district coke oven operations is less than 50 per cent. The usual price for by-product foundry coke now is $4.50, ovens.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	58	44½	⅛	23	5
¼	62	50½	¼	28	11
1—3	64	52½	1—1¼	31	15
			1½—2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7—8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

⅛	55	44½	¼ & ⅜	+13	+48
¼	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7—8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, f. o. b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.	$33.00 to 35.00
Four-inch, Birmingham	37.00 to 39.00
Four-inch, Chicago	43.40 to 44.40
Six to 24-inch, Chicago	40.40 to 41.40
Six-inch and over, N. Y.	28.00 to 30.00
Four-inch, New York	34.50 to 36.50
Stand. fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	3.00c
Boston	3.25c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.60c
Pittsburgh	2.60c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	3.25c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.60c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.50c
Los Ang. lcl.	2.80c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.60c
San Fran. cl.	2.60c
San Fran. lcl.	2.90c
Seattle	2.50c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3 25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

PLATES

Baltimore	3.00c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.50c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	3.50c
Phila.*† (e)	3.05c
Pitts.**	3.00c to 3.10c
San Fran.	3.65c
Seattle	3.50c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.60c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†(e)	3.55c
Pitts.**	3.40c
Portland	4.00c
San Fran.	4.15c
Seattle	4.00c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.10c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	3.75c
Detroit	4.00c
Houston	4.25c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*† (e)	4.00c
Pitts.**	3.90c
Portland	4.50c
San Fran.	4.65c
Seattle	4.50c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	5.10c

BANDS

Baltimore	3.50c
Boston	3.75c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.90c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.45c

HOOPS

Baltimore	3.50c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.30c
Philadelphia*	3.30c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Clev. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more. (c) Plus mill, size and quantity extras. (d) Minus quant. diff. (e) New mill classif. ‡Domestic bars. *Plus quantity extras. **Less than 25 sheets. *†50 or more bundles

Pacific Coast

Light Demand Continues in Most Lines—Pipe Shows Seasonal Activity—Structural Sales in California Show Increase—Freight Advance Causes Higher Sheet Quotations

Seattle—Lettings of steel items in the Pacific Northwest last year reflect the lack of general building and depressed conditions. Awards in lots of 100 tons or more, as reported weekly in STEEL, totaled 92,001 tons, compared with 139,093 tons in 1930 and 151,557 tons in 1929. The second half of 1931 approximated 75 per cent of the first half totals while the year showed about 66 per cent of the total volume for 1930. Comparisons follow:

	1931 Total	1930 Total	1929 Total
Reinforcing	13,083	30,785	27,516
Structurals	31,403	40,863	53,608
Plates	20,325	35,635	46,691
Pipe	27,190	31,809	23,542
Total	*92,001	139,093	151,557

*Also 2265 tons steel rails (includes 855 tons relay).

Bars, Plates and Shapes

Only nominal tonnages of plates and shapes are pending, while demand for both reinforcing and merchant bars is practically absent. General Construction Co., Seattle, is low bidder at $121,386 for the Prosser power plant and canal for the reclamation service, a project involving 157 tons of concrete bars, structurals and gates. Eugene Foundry & Machine Co. has the contract to furnish about 40 tons of shapes and galvanized steel for the water filtration plant for Eugene, Oreg. Only about 200 tons, instead of 350 tons, of plates are involved in the West Seattle overflow pipe line as a portion of it was awarded to concrete.

Pipe agencies report considerable business in sight, some attractive specifications having been released. Spokane will open bids Jan. 14 for 100 tons, while another city is in the market for 1500 tons. American Cast Iron Pipe Co., Birmingham, Ala., through R. C. Polk, Seattle, has the award for furnishing 5626 feet of 6 and 10-inch cast iron and fittings, totaling about 150 tons, for Pasco, Wash.

Quiet Is Pronounced

San Francisco—(*By Air Mail*)—Due to an advance in rail freight rates, effective Jan. 4, price on blue, black and galvanized sheets have been advanced 2.00c per 100 pounds.

The first week of the year started off a number of reinforcing and structural steel awards reported, over 3000 tons of the latter and close to 700 tons of the former having been booked. Distributors of steel products are still engaged in taking inventories and little new business is expected from this source during the next two or three weeks.

Bars, Plates and Shapes

Included among the larger lots of reinforcing steel bars placed were 150 tons each for a home for the aged in Pasadena, a telephone exchange building in Los Angeles and a church in Santa Barbara, Calif. Bids have been opened on 206 tons for highway work in San Diego and Imperial counties, Calif. Los Angeles county will open bids Jan. 11 for 134 tons. Out-of-stock prices in the Los Angeles district hold at 2.50c, base, on carload lots, while San Francisco district quotations are firm at 2.60c, base.

The only plate award of moment involved 300 tons for tunnel lining for the Hoover dam project, Boulder City, Nev., placed with the Consolidated Steel Corp. Signal Hill, Calif., has postponed the opening of bids indefinitely on 850 tons of 18 and 20-inch welded steel pipe, on which alternate bids were to have been accepted on cast iron or reinforced concrete pipe. Bids have been opened on 150 tons for a tank and trestle for Benton field, Alameda, Calif.

Structural shape awards were the heaviest in over three months. The largest tonnage went to the Consolidated Steel Corp. and called for 1500 tons for tunnel lining for the Hoover dam project, Boulder City, Nev. The Golden Gate Iron Works took 650 tons for a court house at Martinez, Calif., while McClintic-Marshall Corp. secured 385 tons for a telephone building in Los Angeles. Sacramento, Calif., awarded the Palm Iron Works 200 tons for a filtration plant.* No new inquiries of size were noted.

Little of importance has transpired lately in the sheet market. Freight rate advances have resulted in higher quotations on blue annealed, hot rolled and galvanized sheets. No. 10 gage blue annealed are now quoted at 2.35c, c.i.f. No. 24 gage hot-rolled annealed sheets are quoted at 2.90c, and No. 24 galvanized sheets are firm at 3.40c, c.i.f.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Obituaries

(*Concluded from Page* 15)

company's Indiana Harbor works. He remained until 1923, when he retired because of ill health. Prior to his connection with the Inland company, Mr. Lees had been with the engineering and mill departments of American Steel & Wire Co., Cleveland, and the Joliet, Ill., works of Illinois Steel Co. Mr. Lees was active in philanthropies and plant welfare work.

□ □ □

Oliver Stubbs, past president of the Institute of British Foundrymen and formerly joint managing director of Joseph Stubbs Ltd., Manchester, Eng., manufacturer of textile machinery and castings, died Jan. 4. During his term as president of the British foundry association, Mr. Stubbs with the late Thomas J. Firth, Brightside Foundry & Engineering Co., Sheffield, was one of the pioneers in establishing the cordial relationship between British and American foundry organizations when he made an official visit to the United States in 1922. Prior to his retirement from business life in 1929, Mr. Stubbs was active in the National Ironfounders Employers' federation and a member of the council of the British Cast Iron Research association.

□ □ □

W. B. Chapman, former president of Chapman Engineering Co., later the Chapman-Stein Co., Mt. Vernon, O., died Dec. 16 at Chicago. He was the inventor of the gas producer bearing his name. When the Chapman Engineering Co. became the Chapman-Stein Co., of Mt. Vernon, Mr. Chapman remained an officer. When the Surface Combustion Corp., Toledo, O., absorbed the Chapman-Stein Co., Mr. Chapman maintained his interest in the gas producer end of the business. The gas producer business was recently transferred to the Cooper-Bessemer Corp., Mt. Vernon, O., and Mr. Chapman was connected with the work there at the time of his death.

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 7.25c, Conn., for copper

Sheets	
Yellow brass (high)	13.25
Copper, hot rolled	16.37½
Lead sheets, to jobbers	6.75
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	16.50
Seamless copper	15.87½
Rods	
Yellow brass (high, full turnings)	11.00
Naval brass	12.12½
Anodes	
Copper untrimmed	13.87½
Wire	
Yellow brass (high)	13.25

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	4.25 to 4.50
Chicago	3.50 to 4.00
Cleveland	4.00 to 4.50
St. Louis	3.50
Heavy Yellow Brass	
New York	2.75 to 3.00
Heavy Copper and Wire	
New York	5.25 to 5.50
Boston	5.00 to 5.25
Chicago	4.00 to 4.25
Cleveland	3.75 to 4.25
St. Louis	3.75
Composition Brass Borings	
New York	4.00 to 4.25
Yellow Brass Tubing	
Cleveland	2.75 to 3.25
Light Copper	
New York	4.25 to 4.50
Chicago	3.50 to 4.00
Cleveland	3.75 to 4.00
St. Louis	3.50
Light Brass	
Boston	1.75 to 2.00
Chicago	2.25 to 2.50
Cleveland	1.75 to 2.25
St. Louis	2.00
Zinc	
New York	1.00 to 1.25
Cleveland	1.00 to 1.25
St. Louis	1.50
Aluminum	
Clippings, new, soft, Cleve.	11.00 to 11.50
Clippings, hard, Cleveland	7.50 to 8.50
Borings, Cleveland	3.00 to 3.25
Mixed cast, Cleveland	3.75 to 4.25
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	3.50 to 4.00

Secondary Metals

Remelt aluminum No. 12'	8.50 to 9.50
Brass ingots, 85-5-5-5	7.12½

Metals

Demand Generally Dull, but Prices Hold Well Except on Zinc and Antimony

New York—Demand for nonferrous metals has been generally dull since the turn of the year but the price structure has been largely steady. Exceptions have been zinc and antimony, both of which eased slightly at the close of last week.

Copper—Sentiment was considerably improved in the copper market on announcement Copper Exporters Inc. had completed revision of marketing rules which will be more favorable to custom smelters in the foreign market and which are expected to provide steadier prices in this country. The market recently has been dull for both domestic and foreign account. Both custom smelters and producers, however, have maintained a firm position with regard to prices, although some metal has been offered by resellers at shaded figures. The conviction is prevalent that with world curtailment of production now in effect the trend in prices can only be upward, although moderately now. Quotations held unchanged last week.

Lead—Sales showed a slight improvement toward the close of the week but in general have been light recently. Prices have held steady on the virgin metal but finished products have been reduced a quarter to a half cent.

Zinc—Prices eased slightly late in the week with the metal available at 3.07½c, East St. Louis, and 3.42½c, New York. Distress lots have been reported sold at lower prices. This has taken place despite the improved statistical position of the industry. Stocks showed an aggregate decline of 13,793 tons in 1931.

Tin—Considerable fluctuation has occurred in tin prices recently, reflecting largely activity in the foreign market. Usual differentials of importers on prices have been eliminated in the past few days by offerings out of warehouse for quick delivery by some interests.

Antimony—The metal eased to 6.00c, duty paid, at the close of the week with demand dull.

Silver — Fluctuation recently in silver has been slight. The metal Friday was quoted 30.12½c an ounce.

Aluminum—Demand has been in small volume at unchanged quotations.

By-Product Prices Steady; Contracting for Naphthalene

New York — Naphthalene shipments on contracts placed recently have started in a limited way. Contracting for the new season compares favorably with last year. Distillates demand is light, although prices are firm. Some lacquer manufacturers have bought toluol rather briskly. Phenol buying has tapered, but the drug trade holds fairly well. Sulphate of ammonia is easy.

Coke By-Products

	Spot
Per Gallon, Producers' Plants, Tank Lots	
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants in	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.10 to $1.20

Quicksilver Prices Soft

New York—Quicksilver prices are easy in a dull market. Sellers are quoting $65.50 to $66.50 a virgin flask of 76 pounds. On small lots, asking prices of $67 to $70 a flask have been reported. Little buying interest is shown.

Prices of the Week, Cents a Pound

	Copper, Electro delivered	Copper, Lake delivered	Copper, Casting refinery	Straits Tin, New York Spot	Straits Tin, New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
January 2	7.25	7.37½	7.00	21.70	22.10	3.75	3.55	3.12½	22.90	6.15	35.00
January 4	7.25	7.37½	7.00	21.20	21.70	3.75	3.55	3.12½	22.90	6.15	35.00
January 5	7.25	7.37½	7.00	20.70	21.25	3.75	3.55	3.10	22.90	6.15	35.00
January 6	7.25	7.37½	7.00	21.12½	21.70	3.75	3.55	3.10	22.90	6.15	35.00
January 7	7.25	7.37½	7.00	21.75	22.30	3.75	3.55	3.10	22.90	6.00	35.00
January 8	7.25	7.37½	7.00	21.87½	22.40	3.75	3.55	3.07½	22.90	6.00	35.00

Europe

Year Opens with Unchanged Conditions — Low Prices and Light Buying Rule

London—(*By Cable*)—Many steelworks have not reopened since Christmas, some on account of stock taking. No change has been made in prices of iron and steel and the general outlook is uncertain with no immediate signs of definite revival. Exports of galvanized sheets are disappointing but tin plate inquiries are fair.

Reports from the Continent are that trade is dull and markets are weak. French and Belgian steelmakers are competing in each others' markets. German producers are refusing to book business at present low levels. Basic and bessemer steel prices are too low for profits. Some small sales of open-hearth steel have been made for America.

The French bar syndicate has been renewed for three years, subject to reorganization of the semifinished comptoir.

British Exports Improve; Domestic Sales no Better

Birmingham, Eng.—On account of the holiday season buying of steel has been restricted to immediate needs as far as the home market is concerned. Some welcome inquiries, however, have come from overseas.

South African railroads are inviting tenders for 1790 tons of steel for a new bridge at East London. Roumanian state railroads are also inquiring for heavy quantities of steel sections. It is announced that British steel manufacturers in keen competition with the Continent have already secured contracts from the railroad tender board at Johannesburg. These are to supply materials for railroads in the Union of South Africa.

Taylor Brothers & Co., Manchester, have been awarded 1500 pairs of wheels and axles and the United Steel Companies of Sheffield are to supply the components of 500 pairs of wagon wheels and axles, the assembly of which is to be executed by Owen & Dyson Ltd., Rotherham.

An interesting development in regard to pig iron is reported from Lincolnshire where it is stated that a valuable contract for the supply of pig iron for the United States has been secured by the Normanby Park Steelworks, Scunthorpe. For several years a considerable tonnage of Lincolnshire iron was sold to America but the business ceased about two years ago. The devaluation of the pound has been a prime factor in restoring the trade. The new contract is of such dimensions that the output of one blast furnace will be absorbed for several months, thus providing employment for about a hundred men.

Confident Upturn Is Near

In the Middlesbrough district business has tapered but there is a confident feeling that the new year will bring with it a substantial increase in consumption. A blast furnace at Cargo Fleet has been put out for repairs and only 17 are operating on the North East coast. The price of No. 3 Middlesbrough iron is maintained firmly and producers of hematite are also standing their ground.

Midland makers of pig iron finished the year with fairly heavy order books, some business having been taken up to the end of March. There is doubt whether prices will remain on the present basis so far ahead. Meanwhile makers of light castings continue to send in good specifications, the chief deficiency being among jobbing foundries and heavy engineers. Some engineers are faring badly and are not in a position to take delivery of more than small tonnages.

Galvanized sheets are steady at £9 5s ($31.63) and there is a more hopeful outlook. Immediate needs are being satisfied by customers at home, forward business being avoided in view of price uncertainty.

It is realized everywhere that the first quarter of 1932 will be a period of financial stringency in view of the heavy obligations of income tax. The necessity of having to pay three quarters of the year's tax at the beginning is an extremely serious problem and can only result in a scarcity of money in February and March.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Jan. 7

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON	£ s d		£ s d	£ s d
Foundry, 2.50-3.00 Silicon	$ 9.95	2 18 6	$ 9.96 to $10.45	2 1 0 to 2 3 0
Basic bessemer	9.52	2 16 0*	9.18 to 9.72	1 19 0 to 2 0 0
Hematite, Phos. .03-.05	11.05	3 5 0	.....	.....
SEMIFINISHED STEEL				
Billets	$18.28	5 7 6	$11.66 to $11.91	2 8 0 to 2 9 0
Wire rods, No. 5 gage	28.90	8 10 0	24.30 to 25.52	5 0 0 to 5 5 0
FINISHED STEEL				
Standard rails	$28.05	8 5 0	$28.55	5 17 6
Merchant bars	1.06c	7 0 0	.58c to .59c	2 13 0 to 2 14 0
Structural shapes	1.18c	7 15 0	.57c to .58c	2 12 0 to 2 13 0
Plates, †¼-in. or 5mm	1.33c	8 15 0	.72c to .73c	3 5 0 to 3 6 0
Sheets, black, 24 gage or 0.5 mm.	1.33c	8 15 0	1.51c to 1.54c	6 17 6 to 7 0 0
Sheets, gal., 24 gage, corr.	1.39c	9 2 6	1.54c	7 0 0
Bands and strips	1.44c	9 10 0	.77c to .80c	3 10 0 to 3 12 6
Plain wire, base	1.29c	8 10 0	1.18c	5 7 6
Galvanized wire, base	1.67c	11 0 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.67c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.42	0 14 3	$3.20	0 13 2‡

British ferromanganese $72 to $75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

			French Francs		Belgian Francs		Renten Marks	
	£ s d							
Fdy. pig iron, Si. 2.5	$ 9.95	2 18 6	$ 9.63	245(2)	$10.56	380	$16.42	69
Basic bessemer pig iron	9.52	2 16 0*	.....	.....	10.01	360	17.97	75.50
Furnace coke	2.13	0 12 6	5.70	145	4.45	160	5.09	21.40
Billets	18.28	5 7 6	14.15	360	11.68	420	23.68	99.50
Standard rails	1.25c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.06c	7 0 0	.90c	500	.65c	500	1.24c	115
Structural shapes	1.33c	8 15 0	.99c	550	.65c	500	1.22c	112.50
Plates, †¼-in. or 5mm	1.37c	9 0 0	1.17c	650	.79c	605	1.43c	132
Sheets, black, 24 ga. or 0.5mm.	1.33c	8 15 0	1.77c	985	1.56c	1,200	2.75c	255
Sheets, galv., corr., 24 ga. or 0.5mm	1.41c	9 5 0	2.39c	1,325	1.95c	1,500	4.43c	410
Plain wire	1.29c	8 10 0	1.62c	900	1.95c	1,500	2.24c	207
Bands and strips	1.44c	9 10 0	1.04c	575	.92c	710	1.44c	133

*Basic. †British ship-plates, Continental bridge plates. ‡German.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

Machinery

LARGE-SCALE purchases of machine tools by automobile builders will depend to a large extent upon public reaction to new models of cars exhibited at the national automobile shows. In a few cases, orders of fair size—especially for grinders—already have been released. Some of these releases point definitely to an 8-cylinder Ford. The $1,500,000 fire which recently destroyed the Pennsylvania railroad shops at Altoona, probably will result in heavy machine tool replacement orders. Otherwise, the possibility of any extensive buying of machine tools by railroads in 1932 appear at this time to be slim indeed.

New York—Machine tool appropriations for 1932 are being kept down to cover only bare necessities pending an upswing in general industrial activity. Potential volume of replacement business is large but most of it will have to await until most pressing need is manifest.

There is some automotive activity, however, Ford Motor Co. having placed additional tools both in the east and midwest, including 22 shapers with a Cincinnati builder and 17 grinding machines for connecting rod work with a Worcester, Mass., builder. Grinding machines also have been ordered by Buick Motor Co.

General Electric Co. has ordered some grinders for its Lynn, Mass., plant and is getting quotations on a list of 22 tools, including lathes, drills and woodworking machinery, for its Springfield, Mass., plant.

On Dec. 27 the worst fire in the history of the city razed five machine shop units of the Altoona, Pa. works of Pennsylvania railroad, with loss reported to be $1,500,000. This disaster, which ruined 20 locomotives and throws 5000 men out of work, destroyed a great quantity of machine tools which must be replaced.

Worcester, Mass. — Machine tool market developments here within the past few days indicate that an 8-cylinder Ford, though not yet officially announced, approaches production. Orders for new machinery and last-minute changes in specifications of machinery already ordered by the Ford Motor Co. indicate a definite shift to an 8-cylinder model.

Automotive inquiry for grinders continues to be the main feature of the machinery market. Ford Motor Co. placed another order with a Worcester grinder manufacturer, supplementing bookings announced several weeks ago. Chrysler is inquiring for machines, indications being that a considerable number are sought.

Pittsburgh — The machine tool market continues quiet, although the holiday period has had but little influence in accentuating general lack of purchasing activity. New inquiry is slow and few new projects have appeared during the past two weeks.

Pending work undoubtedly is accumulating, but it will require a general business revival to release it.

Buying of machine tools still is confined usually to individual items while inquiry also is lacking in large lists. December sales showed a fairly substantial increase for some sellers but prospects for the near future show little improvement.

Leading railroads and steel companies are inactive in the market and there is no immediate prospect of any extensive purchases by Westinghouse Electric & Mfg. Co.

Cleveland—Machine tool builders in this territory are working hard on a number of likely prospects in the automotive field but as yet no orders of any great size have been closed. The national automobile shows in New York and Chicago are expected to be determining factors in this pending business, inasmuch as production schedules in most cases will be determined by public reaction to new models of automobile exhibited at the shows.

Apex Electric Mfg. Co., Cleveland, is reported to have placed an order for a number of grinding machines with an eastern builder. The successful bidder on four milling machines for Wright Field was E. A. Kinsey Co., Cincinnati.

In some cases, dealers find increasing interest in used machinery, of which stocks are large in Cleveland warehouses.

Chicago—Recent order releases to automotive parts makers in this district have added to prospective machine tool work. Inquiries and sales are negligible, while more hopes are hinging on developments late in the first half and the second half of this year.

Removal of manufacturing operations from Milwaukee works of Nash Motors Co. to its Kenosha, Wis., plant will entail little buying of equipment. The company bought less than $10,000 worth of equipment during 1931, but has been in the market recently for fixtures and parts.

An important prospect is a manufacturer of excavating equipment in the Milwaukee district. This and a few other inquiries are expected to become active about Jan. 15.

Northern Pacific railroad has a 6-foot radial drill and several other items pending. Budgets of other western railroads still are incomplete, pending wage negotiations and outcome of proposals for governmental and pool aid.

Exports of Metalworking Machinery

	—November—		January through November	
	1931	1930	1931	1930
Engine lathes	15	38	470	1025
Turret lathes	4	12	209	396
Other lathes	61	59	665	632
Vertical boring mills and chucking machines	2	9	214	292
Thread-cutting and automatic screw machines	25	46	241	638
Knee and column type milling machines	4	19	144	308
Other milling machines	20	41	438	661
Gear-cutting machines	3	46	366	389
Vertical drilling machines	17	19	308	454
Radial drilling machines	2	7	115	153
Other drilling machines	34	80	1563	1483
Planers and shapers	15	20	283	309
Surface grinding machines	6	2	151	166
External cylindrical grinding machines	31	24	386	490
Internal grinding machines	6	5	244	293
Tool grinding, cutter grinding, and universal grinding machines	36	65	728	1507
Pneumatic portable tools	408	1276	8830	17404
Chucks for machine tools	411	984	8400	20608

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

FITCHBURG, MASS. — Multi-Products Inc., 193 South street, has started the manufacture of machinery to cut sheet materials.

ROXBURY, MASS.—Barsam Metal Works Co. has been organized to manufacture sheet metal products, at 2150 Washington street.

SALEM, MASS.—Hygrade Lamp Division of the Hygrade Sylvania Corp., manufacturer of radio tubes, has bought 71,000 square feet, containing four buildings, to enlarge its plant.

New York

BROOKLYN—Schlecker & Son Iron Works has been incorporated with $20,000 capital, by W. H. Flax, 186 Joralemon street, Brooklyn.

BUFFALO—A. R. C. Metals Corp. has been incorporated with 200 shares common stock to manufacture metal products, by J. Halpern, Buffalo.

BUFFALO—M. Bock & Son has been incorporated with $75,000 capital to deal in waste metals, by Killeen & Sweeney, Ell Square, Buffalo.

NEW YORK—Special Machine Tool Engineering Works has been incorporated with $10,000 capital by Feigin & Feigin, 291 Broadway.

NEW YORK—M. & S. Electric Co. has been incorporated with $10,000 capital to manufacture electric machinery, by R. Honigman, 2 Lafayette street.

NEW YORK—Robaczynski Machine Corp. has been incorporated with $10,000 capital to manufacture knitting machines, by M. Seinfeld, 130 West Forty-second street.

NEW YORK—Canfield Refrigerator Co. has been incorporated with $200,000 preferred stock and 2500 shares no par value to manufacture refrigerating machinery, by L. M. Wilson, 291 Broadway.

Pennsylvania

COLLEGEVILLE—Freed Heater & Mfg. Co. has been incorporated with $10,000 capital to manufacture various iron and steel products, by Isaac Ash, 1636 Walnut street, Philadelphia.

PITTSBURGH—New Products Co. has been incorporated with $5000 capital to manufacture commercial household fixtures and devices, by W. L. Waltz, Fairmont City, Clarion county, Pa.

PITTSBURGH—Hydraulics Inc. has been incorporated with 100 shares no par value to design and manufacture machinery, by Benjamin Lassman, 5857 Bartlett street, Pittsburgh.

PITTSBURGH — Pittsburgh 'Lectromelt Corp. has been incorporated with 50 shares no par value to manufacture furnaces for various industrial purposes, by W. F. Downing, 1464 Elm street, Wilkinsburg, Pa.

Ohio

FOSTORIA—Solomon Iron & Metal Co. has been incorporated with 100 shares no par value and $15,000 preferred stock by Louis Solomon and R. C. Guernsey, Fostoria.

TOLEDO—Meisel Machine & Tool Co. has been incorporated with 250 shares no par value, by Harry Levison, 951 Spitzer building, Toledo.

Illinois

CAIRO—St. Louis Meter & Pump Co., St. Louis, is building a plant here for the manufacture of gasoline merchandising units and gas distribution equipment.

CHICAGO—Chicago Metals Corp., 1408 Center street, has been incorporated with $10,000 capital to deal in metals, by Herzon & Fritzhal, 32 West Randolph street.

CHICAGO—Wilson Engineering Corp., 1105 Peoples Gas building, has been incorporated with $1000 capital to manufacture machinery, by Reeda & Peach, 35 Wacker Drive.

CHICAGO—Lincoln Mfg. Co., 201 North Wells street, has been incorporated with $500,000 preferred and $500,000 common stock to manufacture machinery, by Owen Gandy, 12 South Michigan avenue.

CHICAGO—Logan Metal Products Inc., 2332 Logan boulevard, has been incorporated with $10,000 capital to conduct a general metal business, by Isidor Becker, 160 North LaSalle street.

Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids until Jan. 19 on Schedule 7212 for 2350 pneumatic side-cutting chisels, width 7/8-inch, length 9-inch; Schedule 7220 for one cleaning machine, high-pressure water vapor generator, with pump, hose and spray nozzles, portable, electric driven; until Jan. 26 on schedule 7217 for one automatic chucking turret lathe, swing over bed 25 inches, motor driven; Schedule 7222 for one precision backgeared screw-cutting lathe, 8½ x 18 inches countershaft drive, motor driven.

CORNELIA, GA.—Due to unfavorable bond market city has deferred sale of bonds voted for waterworks extension and will await more favorable conditions for carrying forward additions to plant and equipment. Robert & Co. Inc., Atlanta, Ga., is engineer.

Wisconsin

MARSHFIELD—Felker Bros. Mfg. Co., A. G. Felker president, manufacturer of corrugated metal culverts and other metal products, is building a 1-story plant addition, 60 x 100 feet.

MILWAUKEE—Mid-West Die Casting Co., 3930 North First street, is building a 1-story fireproof shop addition, 23 x 35 feet.

Montana

DEER LODGE—City council is considering plans by Burns & McDonnell Engineering Co., Kansas City, Mo., for a municipal waterworks system to cost $200,000. A steel water tank of 100,000 gallons capacity is included.

Dominion of Canada

BROCKVILLE, ONT. — Brockville Auto Top Co., 43 George street, will build a workshop here, 26 x 74 feet, with a wing, 20 x 20 feet.

HAMILTON, ONT.—Tarrant Mfg. Co., Saratoga Springs, N. Y., will establish a Canadian branch here for the manufacture of road sprayers.

HAMILTON, ONT.—Stop Glare Reflectors Ltd. has been incorporated with $40,000 capital to manufacture automotive parts and accessories, by George M. Smye.

HAMILTON, ONT.—Economy Plumbing & Heating Co. Ltd. has been incorporated with $50,000 capital to manufacture plumbing and sanitary fixtures by Thomas James, Hamilton, Ont.

HUMBER BAY, ONT.—Sachau Marine Construction Co. Ltd. has been incorporated with $40,000 capital to manufacture airplanes and flying boats, by Hans Sachau, Toronto, Ont.

LONDON, ONT. — Happy Thought Foundry, Brantford, Ont., a subsidiary of the General Steel Wares Ltd., will remove its equipment to the McClary plant here, and will continue the manufacture of stoves and ranges.

SARNIA, ONT.—Electric Auto-Lite, manufacturer of automobile parts, has added the manufacture of electric clocks and will double production.

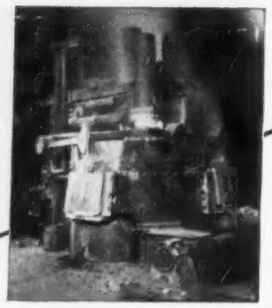
TORONTO ONT.—Dejur-Amsco Corp., New York, is establishing a branch factory here, equipped for manufacture of radio products, to be opened early in 1932. Ralph Dejur is president.

TORONTO, ONT.—Planet Mfg. Co. Ltd. has been incorporated with 1200 shares no par value to manufacture cylinder grinders, by Charles H. Taylor.

TORONTO, ONT. — Thomas Brown Ltd. has been incorporated with $40,000 capital and 300 shares no par value to manufacture plumbing and heating equipment, by Thomas Brown, Toronto.

TORONTO, ONT.—Dominion Laundry Machinery Ltd. has been incorporated with $200,000 capital to manufacture laundry machinery and appliances, by William Albert MacRae, Toronto.

Our modern foundry is equipped with a three ton Heroult electric furnace having a capacity of 200 tons per month.



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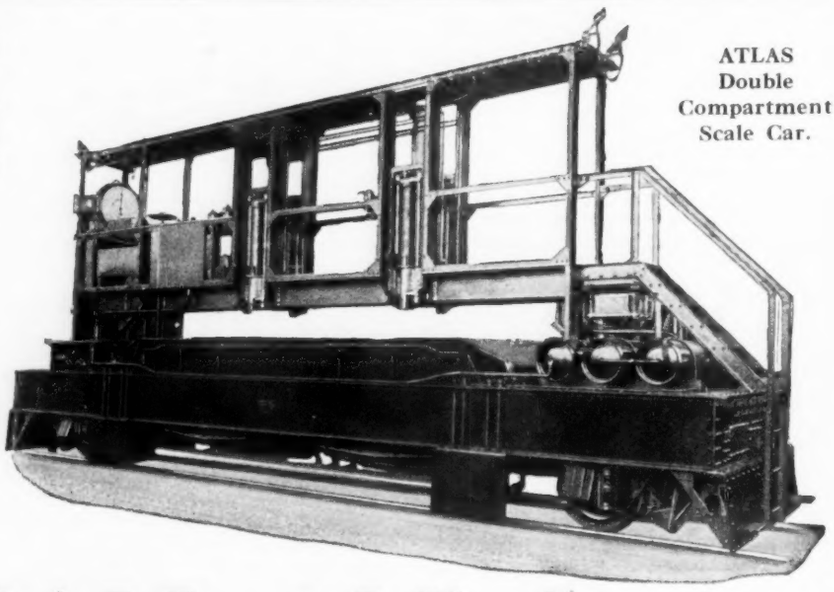

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